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# COMPUTER GENERATED IMAGE: REPRESENTING THE ARCHITECTURE PROJECT FORMERLY AND TODAY

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## *ABSTRACT*

*Architecture has nowadays become a domain that inevitably revolves around computer-generated images, they can be seen everywhere, in advertising, on building boards, on competition boards, in magazines and architectural works, on brochures of artists, real estate projects, on the folios doors and the offers of services of the architects; finally, we find them where there is architecture.*

*Whether the computer image is accepted by all or rejected by others, it is certainly true that it is strongly present in the architectural field; in fact it is currently the first tools of communication around the project.*

*Certainly the means and tools of representation used before the emergence of the image, especially the manual drawings in pencil or others, have not been so satisfactory to bring out the imaginations of the designers, which certainly pushes to resort to the image.*

***KEYWORDS:*** *Computer Generated Image, Design, Architectural Part, Representation*

## INTRODUCTION

### ORIGINS OF THE COMPUTER IMAGE

#### Evolution of Digital Tools

Computer-assisted drawing makes it possible to represent an object in a simple way, by using the classic techniques of manual drawing, the mouse and the keyboard replacing the pencil and the other instruments of the draftsman.

The progress that computer graphics today is the culmination of a work of several years. The beginnings of computer programming were born in the early sixteenth century, with the appearance of the first computing machines. As a result, it is emerging from the machine to launch in machine design to digitize, model, process and process increasingly complex information. In fact, the evolution of this field, as Moore (1965) has pointed out, continues to grow at the pace of innovation, the performance of the handheld, exponentially. So, this timeline has been a big influence on how computer graphics has progressed.[1]

[1]FAOUZI DJAFI, L'apport du réalisme visuel à la représentation de l'image de synthèse dans un contexte de conception architecturale assistée par ordinateur (CAAO) ; Mémoire présenté à la Faculté des études supérieures de l'Université Laval

Dans le cadre du programme de maîtrise en sciences de l'architecture pour l'obtention du grade de maître ès sciences (M.Sc.) FÉVRIER 2005

Computer graphics is the alliance of computer science and graphics, it is particularly interested in two complementary fields: image analysis or image processing, and the synthesis of images or their production by the computer calculation. The appearance of computer graphics and verification of development of production environments at the hardware and software levels.

The greatest contribution in the fields of engineering and especially computer graphics took place in 1897 when the first model of cathode ray oscilloscope appeared. It bears the name of its inventor, the German physicist Ferdinand Braun, the Braun electrometer was the first device that has displayed electrical signals on a CRT screen. This tool later became a measuring instrument for displaying text and graphics. Its operating principle was on the basis of the development of the first computer screens. In 1950, the WHIRLWIND (the whirlwind computer), created at MIT by Forrester et al. has allowed great progress to the performance of the display. The computer is then equipped with a cathode ray tube that could produce and display simple drawings.

At the beginning of computer graphics, the basic principles are found in Sutherland's (1963) research, particularly in his doctoral dissertation on the graphical communication system. His work is also the founding element of the principles of computer-aided design. His thesis presents the first interactive graphical software, Sketchpad, which uses an optical pointer to generate, modify and store drawings displayed directly on the screen.

At the same time, research is proliferating on the graphics and primitives used to improve the computer image, including the study of hidden lines by the publication of the first algorithm by Roberts (1963). Other work is being developed, those of Bresenham (1965) on the incremental plot of the segments, as well as the shadow algorithms of Appel (1968) and that of Galimberti and Montanari (1969) for the determination of visible surfaces. Thus, the technique of eliminating hidden lines, based on one or the other of these algorithms and applying to the space of the image, provides a more natural representation by giving a solid aspect to the volumes instead wire rendering (Foley et al, 1995, Thalmann, 2003).

This period is characterized by the improvement of the methods and techniques of computer graphics and the generation of computer-generated images. The work focuses on the visual aspect of the image and especially its realism, shading treatments and textures of geometric shapes based on polygons. Numerous new techniques appear and identify lines of research to solve the various problems associated with this quest for realism, among other things, the fundamental ideas intended to simulate the lighting of surfaces constituting a 3D scene by smoothing. This polygon smoothing technique was first treated by Gouraud in 1971 and then by Phong in 19752. It is based on surface shading, the purpose of which is to blur the edges of the polygonal facets of the 3D object. At the same time, other algorithms were developed to treat textures, reliefs and anti-aliasing3 (Blinn and Newell 1976). Finally, novelties also concern the refinement of the algorithms for the elimination of hidden lines (Weiler and Atherton, 1977, Martinez, 1984).

The emergence of minicomputers and software designed specifically for architecture in the late 1970s, has made architects interested in computing in the field of development in the first place.

In the early 1980s, the high costs of graphics equipment and software always limited the scope of computer graphics. This constraint is largely sufficient to strongly push the research and development of techniques and tools that improve the performance of work environments. The arrival of microcomputers allows the field of synthetic imaging to be a more accessible discipline. Indeed, with the advent of personal computers and the advancement of computer peripherals, an explosion in the graphics applications sector is occurring.

From the beginning of the eighties the computer has experienced important new developments with the appearance of specialized graphic stations (Appolo, Sun, Intergraph, etc.) and Computer Aided Design (Autocad, Versacad, Star, Keops, Computervision, MacArchitrion, and others) that have allowed some consulting firms to see the many possibilities offered by new stations and new software.

Thanks to the participation of researchers in the development and evolution of computer graphics, the computer image has become a real revolution in the history of the image and a powerful tool for help and training in various fields.

For the architect, the issue of the computer-generated image concerns the mastery of new CAD software and graphical interfaces that allow the visualization of the project throughout the design process.

In the 90's appeared the first virtual 3D modeling software that developed in application areas such as building architecture or aeronautics or automotive.

Indeed, new technological realities in architectural practices have been introduced by the computer since the early 1990s.

And gradually, several experiments have led to the adaptation of some software and programming environments and the development of new manufacturing machines in the service of architecture.

Many architects have experimented with these new technologies in order to find new ways to explore the shape. These architectural explorations constitute a rich and fertile body of study to account for the different behaviors and attitudes towards digital technologies.

**From Perspective to the Computer Image**

This part of the chapter is a journey from antiquity to today, to learn how man has instrumentalized the creative concepts of his mind to reproduce reality. Beginning with perspective, a legacy of advanced mathematics, a man was still unable to understand the three-dimensional vision of his environment. However, perspective is an effective way to convey the impression of the representation of a three-dimensional object. However, without further developments, it was impossible for the prospect to innovate again.

Subsequently, through many experiences over time, an has been able to identify more fully all the stages of his vision.

The first element is the discovery of the nature and role of light on the environment, and the understanding of the function of the vision of the eye which consists in translating the intercepted light into nerve messages, which are then transmitted to the brain responsible for their analysis and thus allowing the vision of man in three dimensions. This mastery of this complex operation is the result of the researches of several scientists of very different times and thus not having the same facilities of means and tools of research. It is for this reason that it took about 2000 years of research, until the 19th

century, for the man to discover new processes. By exercising his creative spirit again, he invented stereoscopy and multiple applications.

Indeed, man has always been intrigued by the three-dimensional vision of his environment, in length, height and depth. The first to have studied this remarkable ability is the Greek scholar Euclid, who defined the main foundations of relief vision by stating that "To see relief is to receive by means of each eye the simultaneous impression of two dissimilar images of the same subject ".

Thus, throughout history, a man tried to retranscribe the world around him on flat surfaces following several techniques of each era, such as drawing, painting, or later photography. And this is how old artistic productions giving only approximations of the real are replaced over time by more appropriate modern tools offering a greater similarity with reality. However, none of these tools made it possible to obtain a sufficiently satisfactory result for the creation of a concrete impression of depth. And it is only through the comprehension of all the mechanisms involved in human vision that man was able to find new solutions to this problem thanks to the invention of new processes reinforcing the relief effect. from two flat images taken from a point of view slightly offset. That said, it is important to emphasize the need to pay attention to the drift of everyday language and the misuse of the three-dimensional term that can also refer to the representation of reality in computer-generated images, designed by modeling software.

The perspective has not been present forever. It should be noted that the mathematical tool that allowed him to exist is geometry, which is the part of mathematics that studies space figures in three dimensions. It was at the beginning thanks to Euclid's work that perspective was born, especially with Euclid's Elements, which are both a sum of geometric knowledge of the time and an attempt at mathematical formalization of this knowledge.

In Euclid's work, all the notions of right, plan, length, and area are exposed and form the basis of courses in elementary geometry. Euclidean geometry gives meaning to ancient treatises on plan and space; this geometry was then considered as a geometry "of the ruler and the compass", the studied objects being the points, the segments, the straight lines, the half-lines, as well as the circles. It is through the use of a Euclidean space modeling, as in classical physics, the plan and the space around us that perspective was born and developed over the centuries.

For the Greeks, creators of an extraordinary civilization and worthy heirs of the forerunners, essentially of ancient Egypt, were concerned to question the man in his relationship with the world. The result was a magnificent artistic, philosophical and scientific culture that reached its peak towards the 5th BC This civilization cultivated knowledge, human relationships and all that belongs to the world of ideas, including the ideal of beauty. Thus, Euclid, Greek mathematician invented the geometric system considered as the basis of all the geometry of our days.

The artists of the Roman Empire deepened the research of Greek philosophers on the principle of drawing in perspective. The Roman architect Vitruvius based himself on the fact that parallel lines coincide or converge to a point when we draw them on paper. He even says, "Although everything is drawn on flat and vertical surfaces, some parts seem to recede towards the bottom while others appear as in relief towards the front." Vitruvius, and probably else before him, had understood the main rule of linear perspective by becoming aware that the parallel lines between them converge to a single point. However, it will take more than a thousand years to see a new attempt to represent perspective in the visual arts.

But the Middle Ages is marked by the absence of perspective. Behind, a set of factors, including the Church or the power put in place, decided the direction of the art which must be above all childlike or intelligible, which is no longer naturalistic but which has an aptitude for a language of signs to explain and not to describe, to easily recognize and interpret, scenes of worship, miracles, life. It is above all timeless, ideal and meaningful.

The tables are not represented in perspective since some elements are represented in elevation, seen from above. The painter does not draw all the elements as if he perceived them from a stable point of view, but rather in the position where they were the most representative, from which an elementary and highly symbolic art.

In reality, painters do not use perspective because they paint things not as they are, but as they appear to be. Nevertheless, despite this loss of creativity, we must recognize a useful aspect of their approach, the dimensions of objects seen from the front or top correspond to their real values.

The true affirmation of perspective in art took place during the renaissance of the twenty-first century. This inspiration for the perspective was felt by the research of the artists of the rebirth of the mathematical laws making it possible to obtain on the flat surface of a table effect of depth in three dimensions. The know-how and the delicacy in the technique of perspective and in the mastery of the proportions are particularly present in Italy, as the new architectures of the cities in full effervescence like Florence or Venice.

On the other hand, the people of the time were contemplating these painters and their paintings for the breathtaking realism they were getting. These painters sought to represent space, the world and what they saw. For the first time, in the history of painting, forms have a volume, they are superimposed and put in perspective.

Luminist research, related to perspective, also occupies a prominent place in the activity of painters of the time with the subtle play of shadows and lights to describe scenes of a delicate realism.

Geometric mathematical perfection in art appears to be absolute with the works of the painter Piero Della Francesca. With flogging, in which he adopts the principles of perspective by combining them with a dazzling palette in which light acquires a mystical value.

The passion for perspective problems will animate, for most of the century, all European artists, leading to an almost metaphysical representation of reality through their works.

Some artists of the time also demonstrated the existence of some fundamental elements of drawing in perspective. We can mention the Florentine architect Brunelleschi, who lived between 1377 and 1446 or Leonardo da Vinci, who lived between 1452 and 1519. Others used it as Michelangelo (1475-1564), Raphael (1483-1520) ) and the German Dürer (1471-1528).

The architect Brunelleschi, through his daring work, demonstrated the perspective as a method, and defines the terms of the horizon line and the point of view corresponding to the vanishing point in frontal perspective.

Leonardo da Vinci, on his part, revealed a remarkable advance in the scientific and technical fields to explain this theory as we know it today. The painting is mental and the artist had to work more with his eyes and his mind. For him, the perspective was nothing more than the vision of a place or objects situated behind a transparent window, and on the surface of which this landscape or these objects would be drawn. He did not stop pushing the artists to paint with the naked eye.

He reached the same conclusion as Michelangelo, the eye has so much experience in his field that at a glance, without drawing angles or lines and without calculating distances, he is able to guide the hand so that it represents everything that is revealed to it, and in such a way that it is perceptive.

It was also Leonardo da Vinci who began to understand the concept of the atmosphere. Indeed, he understood that in the case of perspective, the outlines of any object are dimmed as they integrate with the ambient environment of the painting and the man is able to mentally correct the errors due to note bad posture because the painting is visible only from one point of view, the one where the painter's eye was.

In the nineteenth and twentieth century, the use of perspective as a tool is no longer a necessity since artists formally dominate it. They use it, preferably so that their pictures are consistent with reality.

Van Goh, Gauguin and Cézanne stop to consider realism a visual problem but rather a problem of expression, without neglecting perspective. On their works, a perspective no longer awakens the perception of the visual, but their anxiety is rather spiritual, a fear of the infinite, of all that is interminable and that which is beyond the real world.

Thus, since ancient times, artists have become aware of the binocular representation in relief in parallel with the evolution of perspective. And that's where the stereoscopy begins, being the set of techniques put in place to generate a perception of relief from two flat images. Indeed, during several epochs, some drawings exposed a relief from two points of view representing the right and left eye. Although, it is only in the nineteenth century that the relief actually begins with the beginnings of photography and scientific developments.

The first use of stereoscopy for cinema was in 1915 by Edwin S. Porte in New York in anaglyph. And since that time, several other attempts to highlight this type of cinema have emerged, however, for economic reasons, but also because of the renunciation of the public, it has not been successful. It was only during the 90s, and thanks to the advent of digital, there was a revival of cinema in relief. And this enthusiasm will continue and evolve during the 2000s for this time to have a great attraction of the spectators.

Currently, to achieve stereographic photos or films, several means are used including two-shot cameras, parallel cameras, converging cameras, those with a simultaneous triggering of two devices, or those with a stereoscopic camera.

Subsequently, the stereogram is one of the oldest techniques of stereoscopy, consisting of a computer-generated representation that allows seeing a three-dimensional image through a visual association of convergence or divergence, guided by particular accommodations.

These concepts of convergence or divergence make it possible to achieve a three-dimensional vision from two images based on the principle of cross-vision and parallel vision, this technique is older than the stereogram, and it has served basic for advanced techniques in the field of stereoscopy.

## THE NEED FOR REPRESENTATION IN ARCHITECTURE

### Creation of the 3D Image

The 3D computer image has invaded the last twenty years of our screens. If cinema has been able to make it a place for gold through special effects and animated films, this new language is promised a future that easily exceeds its current use. This new technology opens new fields of aesthetic exploration, like the oil painting invented at the end of the

Middle Ages or photography in the nineteenth century.

Before creating a computer-generated image, one must first make a sketch, some still go through manual steps even with new technologies, others go directly to the computer. Then after the sketches, there are two main steps: modeling and rendering.[2]

Indeed, the first step is modeling. By opening a 3D software, we are facing emptiness, nothingness, only a marker is visible in the center of the screen symbolizing the center of the world. A virtual world center, of course, but a starting point for the creation of a new universe based on conventional geometry rules just waiting to be foiled. To be a 3D creator is to become a sculptor, a kinetician, a choreographer, an architect, a lighting designer, a mathematician. This art is at the crossroads of all others, an additive synthesis of our image culture. The resulting images cover the entire aesthetic spectrum, from evocation to the most immersive realism. Faced with such capacities on the treatment of images, it is essential for the narrator to question himself, to become an experimenter.

The factory of the computer image goes through several steps that are done using software dedicated to the creation of synthetic images.

**From the Mental Image to the Computer Image**

Certainly, it is very difficult to claim to know how spatial creation works. Certainly at the beginning there is a mental image. Without knowing where it comes from and how it is done, we are convinced that it must be exteriorized as early as possible in a creative process. Indeed, translated in a sketch, a model or an image, it becomes the main reference of the creation.

Even if there is no complete similarity between the mental image and its material representation, it is of fundamental importance for creation.

How can computer graphics help to externalize it and how can it represent it in the best way, without losing any of its heuristic virtue?

Indeed, one of the main questions raised at the center of the debate about the computer: is it going to replace the pencil, traditional tool of the visualization of mental images and thus an excellent tool of architectural creation?

According to Sabine Porada, the computer is able to face the areas of visualization inaccessible in pencil, without necessarily replacing it.

Adepts of the pencil accentuate, on the one hand, the heuristic role of an experienced gesture, of a movement of the spontaneous hand, but including all the resonant intelligence before the brain and, on the other hand, the role of visual thought that is exercised at the very moment of the performance. This testing of the representation allows the designer to test its relevance with regard to a whole series of evaluation criteria, constraints or objectives that he sets himself or that are imposed on him.

[2]L'image de synthèse ou l'invention d'un nouveau langage, 06/07/2015 12:43 CEST | Actualisé 06/10/2016 00:48 CEST

Julien Deparis Directeur de l'école Mopa, spécialisée dans le film d'animation et l'image de synthèse

The pencil translates, more than the magnificence of this traditional tool of the designer, the need to have a tool for externalizing the mental image. Whether it is expressed externally by metaphor, by model, by sketch or by computer image, does not matter as long as it expresses itself well. Traditionally, the architect has always been able to freely choose the idea-expression tool of the project. An infographic tool must be able to offer this freedom of choice.

To be able to compete with the traditional tools of expression, the computer image must have a heuristic quality no less than a sketch. And for the architect to be ready to sacrifice his pencil, it is necessary that the computer image goes far beyond it in this field

The profession begins to realize that the heuristic virtue of visual simulation is the first asset of computer graphics. Architects readily admit that "as far as pure creativity is concerned, the computer image is a great stimulant.[3]

## PLACE OF THE COMPUTER GENERATED IMAGE IN THE DESIGN PROCESS

### Computer Generated Image and Architectural Part

It is certainly true that computer graphics are present in several media, and for various purposes, advertising, presentation brochure, construction site sign etc. Indeed, among all these supports, we think that the competitions are the best platform for the analysis of the report of the image to the architectural party. The moment of the competition corresponds to a choice to be made between several criteria. In this procedure of judging the offers of the architects, the choice of a graphic style of figuration is a rhetorical criterion, which is added to a series of other criteria of judgment, the budget, the program, the technical aspects, and functional and other. Even if the images are not the only arguments of the project, their style tells us something about the ideology, the priorities, or the imaginary of the project. Thus, in the competitions, the synthetic image is not made to deceive us, but to tell us since the stylistic choices carry stories. The question is not that of the quality of illusion to be achieved, but that of the expressive style of the image. The graphics style chosen must convey the right message to the project.

[3]AU CARREFOUR DES ARTS ET DES SCIENCES, CRÉATION SPATIALE EN IMAGE DE SYNTHÈSESabine PORADA Laboratoire de recherche en Architecture, Méthodologie de la conception et Infographie, LAMI

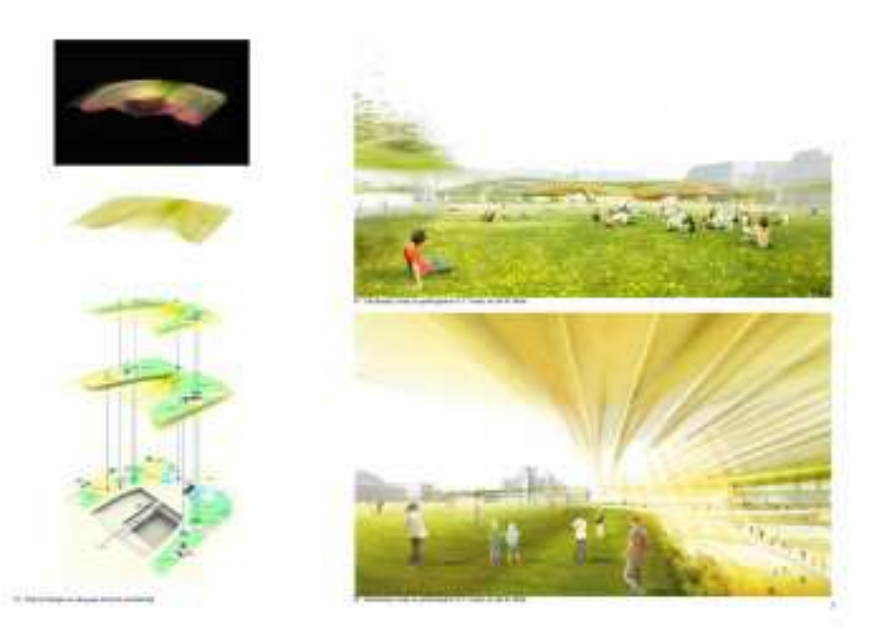

Figure **1:** Halles Contest Berger & Anziuttiproject, Source: Arsenal Pavilion Press Kit, 2007

Figure **2:** Halles Competition: The Mimram / Leclercq Project. Source: Press Kit of the Arsenal Pavilion, 2007

Choosing a rendering style is an effective way to bring stories to the project implicitly, through the image. At the Halles competition.

Indeed, the image rendering style of Berger &Anziutti's project accentuates the link with nature, while the Mimram and Leclercq agencies project images highlight the structural and technical aspects.

The decisive criterion in the implementation of images is not that they are realistic to make an illusion, but it is the message that one wishes to convey, which corresponds to a function of expressiveness. For example, depending on the rendering style chosen, a project will be expressed as rather technological, rather ecological, rather classical, etc.

**Computer Generated Image as a Conceptual Representation of the Project**

Conceptual representations can express the design object as process logic does. They have the ability to represent both visual intuition and verbal logic. There is certainly a difference between the logical image and the artistic image. The question of Ph. BOUDON was certainly posited in this sense: are conceptual images merely logical images? And can we speak of a logic that is not purely verbal, but also iconic?

"By giving themselves as images, they can express the spatial allocation logic of the object." Reflection on this allocation can begin with the elaboration of a text, but verbal concepts do not yet have a precise spatial meaning. and particular, they contain the potentiality of multiple concrete organizations of space. "[4]

For Sabine PORADA, at the time of formatting a graphic scheme, begins the formatting of the particular spatial model. A diagram, while still containing words, is already beginning to become an iconic model and no longer just verbal. But the opposite approach can be demonstrated: the concept can be born of an image and through its schematization lead to a reflection on the spatial organization. There is no opposition between a verbal representation and an iconic representation, because the two can refer to the same thought but at different levels, the two can complement each other, specify themselves. The approaches may be more or less logical or poetic for both verbal descriptions, up to the metaphorical description and for the iconic description, up to the representation in the flowchart.

It supports this by the example of the prototype which has always played an important and complex role in the history of architecture and particularly in architectural design. The basis of the artisanal architecture, it constituted a kind of conceptual standard: an emblematic coupling verbal and visual, a spatial schematism.

The innovation in the artistic conception of the space can be at the level of the approach: the elaboration of a new method of conception or at the level of the result: the discovery of a new generic form which will be a new prototype. The tool that will be able to influence these levels can really help the creation.[5]

**The Styles of the Realism of Computer-Generated Images and the Conceptual Part**

The image of synthesis as a support for research and as a design aid is nowadays a necessity to which the designer makes use throughout the process of elaboration of the architectural project. Thus, the search for visual realism, through these images, is a key objective that must be achieved to better represent the real or virtual work and thus provide a clearer and more effective understanding of its visual appearance.

[4]BOUDON Philippe, Figuration graphique en architecture, ed. D.G.R.S.T. & A.R.E.A., Paris, 1976.

[5]PORADA Sabine, Imaginer l'espace et spatialiser l'imaginaire, nouvelles technologies de visualisation en conception architecturale, , revue Réseau, n°61, p.33-49, 1993.

"Realism in computer graphics is the derivative of a larger field that is computer graphics. "[6]

There is a multiplicity of realistic styles that coexist at the moment, in the field of computer graphics and which give through their styles different aspects to projects. Thus, and in order to be able to process the effect of the representation of the project via the computer image on the latter and on the whole of the process of its creation, we considered it opportune to embrace the aspect related to the styles of realism. computer generated images.

Indeed, the differences between the staging techniques of computer-generated images make it possible to introduce the notion of graphic style. Since there are different photographic styles, there are different styles of synthesis and "realistic rendering".

A recent issue devoted to the computer-generated image of the journal CLOG, reveals a certain number of styles of realism in computer-generated images: "french cool", "Chinese style", "smooth style of the promoter "," hybrid style "," Nordic romantic style ", etc.

In addition to these other styles were raised during the round table "Computer Graphics and Photographs in Architecture: Reality, Realism, Fiction?" [7]During which three agencies of perspectivists represented work on the photo-realistic and whose productions are distinguished significantly, both in terms of aesthetics and the techniques used.

Indeed, for the same agency, the graphics style may vary depending on the project, however, three trends have been identified corresponding to "trademarks".

Following a comparison between three images of architectural projects that fall into a similar register with points of view at human height, and landscaped foregrounds. Three types, or realistic rendering styles, have been identified:

**Figure 3: Transparent Graphic Style © RSI Studio**

[6]FAOUZI DJAFI, L'apport du réalisme visuel à la représentation de l'image de synthèse dans un contexte de conception architecturale assistée par ordinateur (CAAO) ; Mémoire présenté à la Faculté des études supérieures de l'Université Laval dans le cadre du programme de maîtrise en sciences de l'architecture pour l'obtention du grade de maître ès sciences (M.Sc.) FÉVRIER 2005

[7]Des usages et réalismes de l'image d'architecture Par Marie-Madeleine Ozdoba - 25 juin 2013 ,Table ronde «Images de synthèse et photographies en architecture : Réalité, réalisme, fiction ?» organisée le 5 juin 2013 à la Cité de l'architecture et du patrimoine, sur une initiative d'Aude Mathé et Olivier Namias.

**Transparent Style**

The image of the agency RSI Studio is a "transparent style": the rendering is characterized by crystalline transparency, close to a photographic result. In fact, to create this image, graphic designers have simulated all the features of this tool (aperture, diaphragm, etc.), inside a virtual model that reproduces, with a great degree of complexity, the physical characteristics of the world. real (light, vegetation, materials, etc.): it is "virtual photography".

**Figure 4: Collected Graphic Style © Loukat**

**Collage Style**

The image of the Loukat agency is a "collaged style": in the continuity of illustration techniques before the infographic tool, this image was the subject of a complete construction, from elements, the vegetation, the characters, or light effects, were added in 2D to the rendered base: the composition is not done here mainly at the level of the 3D model, but in the next step, in the image plane, which seeks to come closer to a photo-realistic effect, by simulating effects such as overexposure, backlighting, etc., but at the same time, certain elements 'away from it, like the semitransparency of the guardrail in the foreground, implemented to privilege a certain freedom in figuration, at the service of the desired effect (a lesser visual impact of the railing).

**Figure 5: Synthetic Style© Artefactory**

**Synthetic Style**

Finally the third image, Artefactorylab agency, is a "synthetic style": based on a modeling and a rendering computation very pushed, this image was the object, unlike that of RSI, of an important graphic treatment at the time of rendering, which is not without evoking the aesthetics of certain animated films or video games.

For the collaged style most of the staging takes place on the Photoshop Software (collage, effects, etc.), while for the transparent and synthetic styles most of the work is done at the rendering level.

However, these three styles diverge in particular on the settings applied at the level of rendering software, since there are those looking for the purest photographic aesthetics, while the others use graphic effects that move away, for to give the image a more surprising character.

Each of these three graphic styles goes hand in hand with the choice of a certain type of focus, a point of view, or framing, contributing to the "aesthetic coherence" of the image.

**Romantic Style**

Architectural projects are therefore one of the areas where we can observe how an era is represented. Society gets into a narrative and projects itself into the future, precisely through the projects it adheres to, but also in the way they are represented.


**Figure 6: "Rendering: the New Romanticism" © Mockitecture / CLOG**

Is the contemporary architectural imaginary a "new romanticism"? Are we witnessing the return of an aesthetic of the picturesque and the "evanescent ruin"? The treatment of light, skies, foregrounds, or the effects of blur, haze and halos, widely used today in architectural perspectives, and more particularly the outdoor images representing the context landscape or urban, indeed evoke this pictorial universe... The affinities of some images, the most worked, with the aesthetics of the sublime and the ruin seem undeniable, as well illustrates this "visual commentary" of the collective Mockitecture, published in the journal CLOG2 (Fig.21: montage associating a painting by Thomas Cole with an image of contemporary architecture)...[8]

[8]L'imaginaire romantique des vues d'architectures contemporaines*March 5, 2013 · par* Marie-Madeleine Ozdoba


**Figure 7: Adept Project, Image Luxigon / Andreas Schelfhout, Winter Landscape, 1846**

**Figure 8: Hauvette Architects Project, Image RSI Studio / Hans Gude : Chiemsee, 1871**

Série de juxtapositions entre images d'architecture contemporaines et tableaux du 19$^{ème}$siècle

The use of a romantic painting by manipulators and creators of images is not expressed in a claimed way.

Interviews with perspectivists, notably with Doug & Wolf, RSI Studio and Luxigon, three agencies representative of the international trend in architectural illustration, from which the images used in the images above are drawn, only one of the three agencies, has expressed his inspiration partly from painting3.

This leads us to want to understand how the reference, voluntary or not, to the style of the romantic painting, it developed as a style of architectural representation, and to know in what this style of images arouses currently identification or desire of the public.

Certain hypotheses, notably ones of Eric de Broche, defend the idea that the imaginary of sublimity and ruin meets contemporary anxieties about the environmental danger.

## CONCLUSIONS

The image, a major tool and main representation of the architectural project, is not only a means of communication available to architects, but also a design tool that intervenes even for the expression of architectural parties and concepts sought by the creator of spaces.

It also conveys atmospheres to their perceivers, allowing them to project easily into the future project, something that was not very present for the old means of drawing, and especially for people uninitiated to conventional architectural drawings.

**List of Figures**



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