THE ARCHITECTURAL ILLUSTRATOR: A KEY FIGURE IN VISUAL COMMUNICATION

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ESSAY 129/08

ARCHITECTURAL ILLUSTRATION
COMMUNICATION
DRAWING
RENDER
SURVEY

In contemporary architectural practice a key role in visual communication is performed by the illustrator. This professional shares the expertise of the architect, master of a strictly technical-engineering language, and the artist in the broadest sense of the term. For an architect drawing is a means, for the illustrator an end in itself. As a mediator between the designer and the general public, he must be able to deeply understand the architect's thoughts, translate his ideas into images and convey the correct message to the audience. Sometimes visual messages, though obvious to the illustrator, can be unclear for the observer and generate misleading responses. In these cases the type of image has great importance being a sort of language more or less understandable. This paper reports on a survey that was created in order to assess some of the fundamental elements that characterize the visual products. It was carried out at the Department of Architecture and Design, University of Genoa, and its results support the thesis that the architect's idea and creative spirit can best be conveyed by a hand drawn image, whether traditionally or digitally executed, rather than a computer-generated image such as a photorealistic render.

INTRODUCTION

The illustrator, the architect, and the digital world

Visual representation can be considered as a form of figurative language that translates the initial mental speculations of the design process into images. The literature on the subject reveals the difficulty in labelling a graphic work that, owing to its very nature as a mental product, can hardly be codified. However scholars have brought their attention to the relationship between image, drawing and visual perception (Arnheim, 1974; Guillerme, 1982); in particular, some of them studied architectural imagery focusing on its role in communication between designers and audience (de la Fuente Suárez, 2016; Hardenne, 1994; Meisenheimer, 1987; Oechslin, 1987).

The communication and artistic relevance of architectural imagery has always been paramount, so much that a specific professional figure has traditionally been devoted to that end. Architectural illustrator, illustration artist, visualization artist, visualizer are some of the names used to connote the role of the professional dealing with images in an international studio. The nomenclature is actually rather confused and not univocal even in the most acclaimed companies involved in worldwide business. This uncertainty about the definition of a professional role that has been paramount in architectural practice for such a long time, and which is timidly returning to appear in the contemporary world of design, is perhaps one of the many consequences of the drastic change that has taken place in the conception and representation of the architectural project due to the intensive use of the computer. The architect is also a draftsman and for a long-time drawing skill have been necessary to perform his job (Jarvis, 2018). Architects used to draw to assimilate, learn, study and remember (Fisher, 2014). For this reason, since the sixteenth century, a good practice in the training of a young architect was to travel, possibly on the *Grand Tour*, and return home

with sketches, drawings, and notes (Lever & Richardson, 1984). Today this preliminary work is almost entirely replaced by digital images that are closer to a visual memory rather than a process of perception and awareness. The contemporary architect's graphic production has found technological devices to be an excellent tool to make work easier and faster.

The possibility of creating settings perfectly adherent to reality and the advantages of a computer system that can easily create, modify, share, and store images, quickly fascinated the design professionals who, in the last twenty years, encouraged training in architectural and engineering software (Amoruso, 2008). However, questions have lately arisen about the effectiveness of communication by computer-generated images. The architects themselves have noticed a progressive 'standardization' of their work and discovered faulty control over the message conveyed by the final visual product (Carrillo de Albornoz & Calatrava, 2018; Pallasmaa, 2009). In the collective imagination freehand drawing remains anchored to pen and paper, with the obvious limitations of the time and personal skills required by the medium used. Some major international studios, such as the one founded by Nikken Sekkei in Japan, make of hand drawn images their distinctive strength (Yamada, 2022). An entire team of draftsmen and watercolourists, under the direction of Masaki Yamada, is dedicated to the manual rendering of large-scale projects, and the drawings, often used in public expositions, in presentations to jury committees or to clients, are preferred to digital images for their communicative and imaginative imprint.

As asserted by Yamada (2008):

> The strength of a hand-drawn illustration is its ability to convey inspiration intuitively, exuding charm and warmth to spark the imagination. And it's the fastest way to visualize thoughts and feelings, to create a picture with minimal information while also showing the process. (p. 8)

Another renown international studio which makes wide use of hand drawing with watercolour is Steven Holl's. He himself has the habit of sketching projects by hand and had started with pencil drawings, but later said,

as reported by Keskeys (2023):

> Around 1979, I streamlined it to five-by seven-inch watercolors. With the watercolor, in the quickest way, I can shape a volume, cast a shadow, indicate the direction of the sun in a very small format.

No doubt, the fast swirl of watercolour could match in speed the flow of ideas and even serve as a new inspiration. Not every architectural practice may have the resources and the time required to create ink and watercolour illustrations. Fortunately, these difficulties can be overcome by modern hardware and software, which allow drawing and painting with similar visual and haptic perception in a digital environment, where erasing, corrections, superimpositions, changes of brushes and colours are as easily done with a click. This way digital freehand drawing is not an oxymoron (Richards, 2013), but a reality brought to us by the graphic tablets and sophisticated raster software, which is being exploited by some, perhaps still too few architectural studies (Jacob, 2017; Leandri et al., 2022) (Figure 1).

The return of hand drawn images

The use of hand drawings makes it easier to characterise the crafts coming out from a studio, more or less as much as it is possible to recognise the style of a painter, whilst it would be hard to assign authorship by just looking at a photograph or a photographic render. Firms like Foster + Partners, Zaha Hadid Architects, RPBW and others have been able to use the 'graphic sign' as a branding strategy for their company. The recognition of the architectural studio is of vital importance, as it is for any company willing to be competitive in the market. Therefore, drawing is not only a means to provoke emotional re-

Fig. 1 Gaia Leandri, 2022. Handmade digital illustration on a Wacom tablet..

sponses in the observer, but its adaptability and communicative strength become powerful tools in defining the brand identity (Figure 2).

The use of hand drawn images has historically proved to be a winning strategy. Frank Lloyd Wright is most remembered both for his designs and for the original drawings that combined the technique of monochrome geometry for the projected building with the appealing atmosphere of the surroundings, a kind of composition which is now recognized as the first board of the modern presentation of a project. The outstanding drawings, protagonists of many exhibitions and books, were mostly made by Marion Mahony Griffin, one of the first female architects in America at the beginning of the last century, whose great communication skill Wright so much appreciated that he

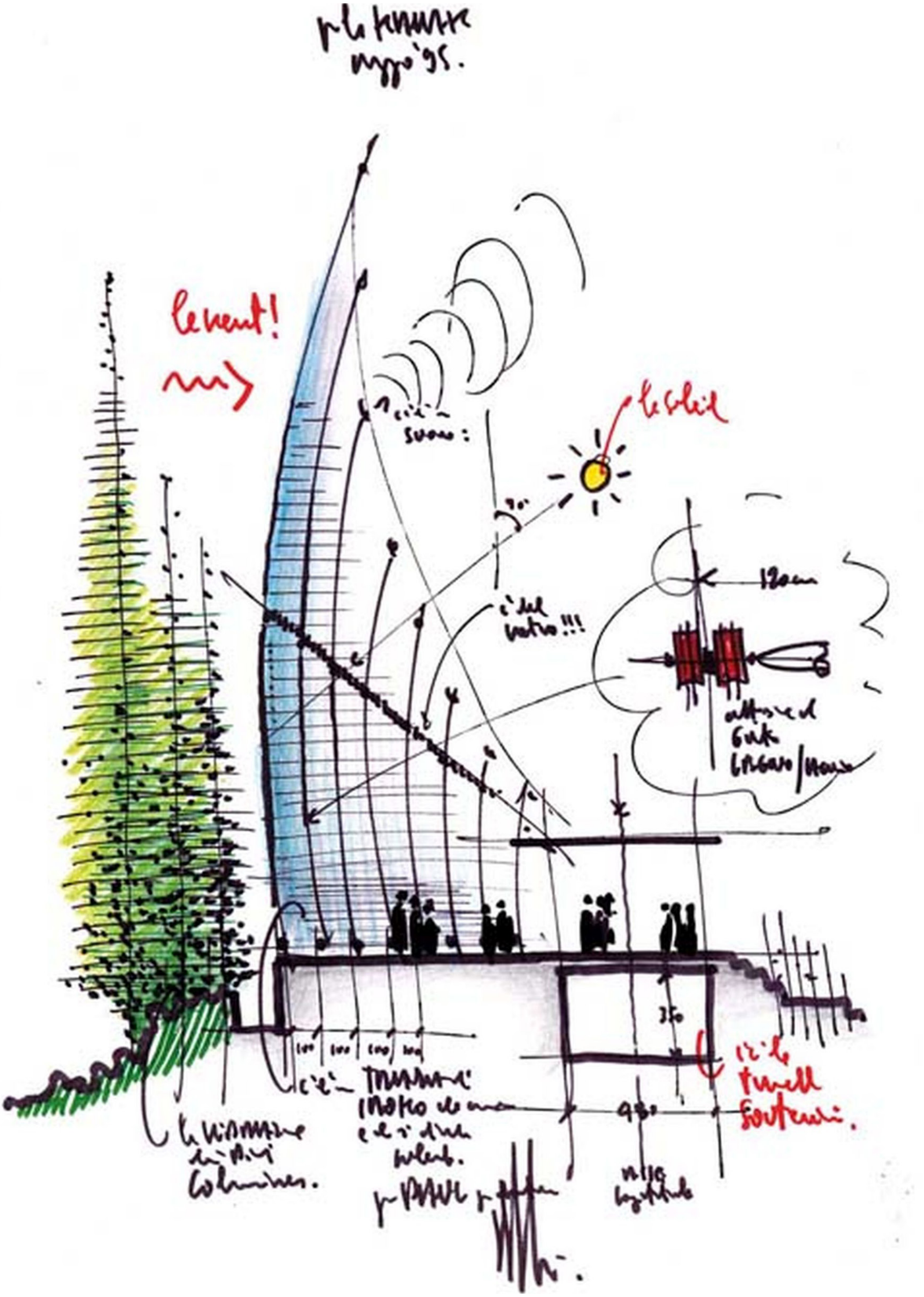
le vent!

Fig. 2 Renzo Piano (RPBW) 2013. *Diagram of a case at Jean-Marie Tjibaou Cultural Centre*. Retrieved December 10th, 2022, from <https://commons.wikimedia.org/wiki>. The typical style of the studio with pale yellows and azure colours is well blended here with characterising pencil strokes. Licensed under Creative Commons Attribution.

wanted her as the leading member of his staff to illustrate some of his projects (Allaback, 2008; Pregliasco, 1995).

In more recent times, the drawings of Helmut Jacoby, an architect who devoted himself exclusively to architectural illustrations, proved to be successful in international competitions, in the United States and in Europe (Jacoby et al., 2001). His deceptively simple drawing, where the accurate depiction of buildings is mingled with the presence of human figures acting in everyday situations, became a paradigm for other illustrators. Even today his style is a mark for Norman Foster's illustrations with whom Jacoby worked for many years.

In the contemporary scenario, where digital tools are more and more affordable, the quality of photorealistic renders is no longer discriminating for the recognition of the architect. The purpose of the render is to portray reality as accurately as possible, and this limits the identification of the author. The final product is not only a work created using a computer but does not present any element of graphic recognition. This is why many studios today require the creation of a unique and easily identifiable style, in order to gain more visibility for their products in a now crowded and globalized panorama. The purposes are multiple: from advertising, exhibitions, to publications meant to become momentous.

Freehand drawing –on paper or tablet– is therefore returning to be a protagonist in the world of architecture, combining the lines and preparatory sketches with the artistic repertoire of textures, colours, lights, and shadows, to cover the whole process of the architectural project, from its genesis to the final presentation.

METHODOLOGY

Aims of the research

The aim of the investigation was to assess if a hand drawn image would better be suited than a photorealistic render to transmit the architect's message. The brief research

reported here was performed as a preliminary proof of concept to assess the feasibility and reliability of a simple questionnaire that could be answered quickly and easily.

Subjects

For this first investigation, a limited sample of subjects was chosen from the Department of Architecture and Design of the University of Genoa. The experiment was run in November 2022 during two seminars held by the author at Department of Architecture and Design, tackling the issue of the effectiveness of visual communication. All participants attending the seminar took part in the test, for a total of 39 test takers including 4 teachers, 8 PhD students and 27 first-year students. Taking the test required approximately 15 minutes and was followed by the discussion of the results. Age ranges of participants are summarised in Table 1.

age	number	%
<=19	1	2.6
20-29	29	74.4
30-39	4	10.3
40-49	1	2.6
50-59	3	7.7
>=60	1	2.6

Table 1. Age ranges of participants.

A performance based questionnaire

A simple questionnaire was created, whose results were meant to be based upon performance of the test takers rather than on their personal judgement (with the exception of the engagement section). No psychometric assessment was required, as it would inevitably be strongly subjective, a characteristic that flaws the large majority of investigations on architectural imagery. The test was structured so that in future research it could be submitted to a large audience of both educated and uneducated takers, on the web. The questionnaire was created on *Typeform*©, a platform that allows to combine images and text. It was a one-stem multiple-choice type with correct answer scored 1 and wrong answer scored 0 (Ng & Chan, 2009). The position of correct answer in each question was randomised by the Typeform© platform. All questions, with the exception of the engagement section, were automatically randomized by Typeform and presented to each participant in a different order. The questionnaire was articulated in three

main sections based on previous experience (Leandri et al., 2022): communication, recognizability and engagement.

Communication section

It is not unusual that in an urban planning image –an overall view with the insertion of the project in the context– the observer may not know where to look or, even worse, could focus on the wrong building. This uncertainty is a sign of weak communicating ability by the image. This section, containing questions 1 and 2 was named 'communication', meaning that it was aimed at assessing how much the visual message (vignettes) would communicate to the observer its meaning as novelty and originality of a newly designed project, to be recognized among others already existent. The comparison was between hand drawn illustrations versus photorealistic renders: which of the two would best communicate to the onlooker. Question 1 showed a vignette with a hand drawn image which illustrated a new project among other already existing city buildings. Four vignettes with already marked different buildings were offered as possible solutions. Only one marked the correct new project. Question 2 was analogous to 1 but now photorealistic renders showed the project. The test takers were asked to choose the correct vignette which highlighted the architectural project, so the answer would only be linked to the ability of the subject to read the communication of the vignette, which can be considered as an objective parameter.

Recognisability section

In a world of increasingly standardised projects, recognition of the image style at the first glance can be of crucial importance. So, in this part of the test, the participants were asked to recognise the images based on a set of drawings and renders of the same architectural practice (Figure 3). The goal was to assess how much the 'sign' of the project's author could be recognised in hand drawn illustrations compared to photorealistic renders. The test takers were

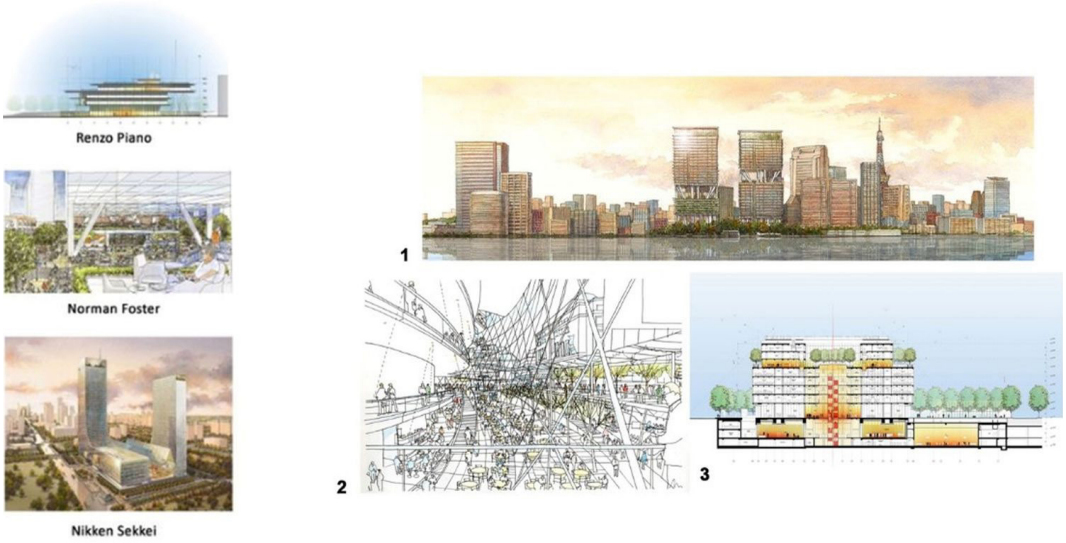

Fig. 3 Gaia Leandri, 2022. *Recognisability section of the questionnaire*. The set of reference drawings and the three images to match with the correct architectural studio. In the left set: *Whittle School*, USA, Renzo Piano. Retrieved December 10th 2022 from <http://www.rpbw.com>; *Haknook Headquarters*, Korea, Foster&Partners. Retrieved December 10th 2022 from <https://www.fosterandpartners.com>; *Botanic Garden*, Russia, Nikken Sekkei. Retrieved December 10th 2022 from <https://www.nikken.co.jp/ja>. In the right set: 1 *Undefined*, Nikken Sekkei, Retrieved December 10th 2022 from <https://www.nikken.co.jp/ja>; 2 *Swiss Re House*, UK, Foster+Partners. Retrieved January 7th 2023 from <https://www.pinterest.it>; 3 *Whitney Museum*, Renzo Piano. Retrieved December 10th 2022 <from http://www.rpbw.com>.

first shown 3 hand drawn images authored by as many famous architectural companies, and 3 photorealistic renders from the same, in order to familiarise themselves with each company style. In question 3 a set of 3 new images by the same companies was shown, unlabelled: the test takers had to pick up the correct combination of authorship just recognizing the style of the illustrations among 6 possibilities. Question 4 was analogous to 3, but this time the images were photorealistic renders. As much as in the first section, here the subject's answers would be linked to the ability to match image styles, providing an objective result.

Engagement section

Differently from the first two sections, characterised by performance driven answers, this was intentionally meant to record the subjective opinion of each subject on hand drawn versus photographically rendered images. Here the test takers were asked to express a preference between two images illustrating the same interior project, in questions 5 and 6. They were not asked to justify the choice, nor to give a qualitative assessment of the image, but only a spontaneous

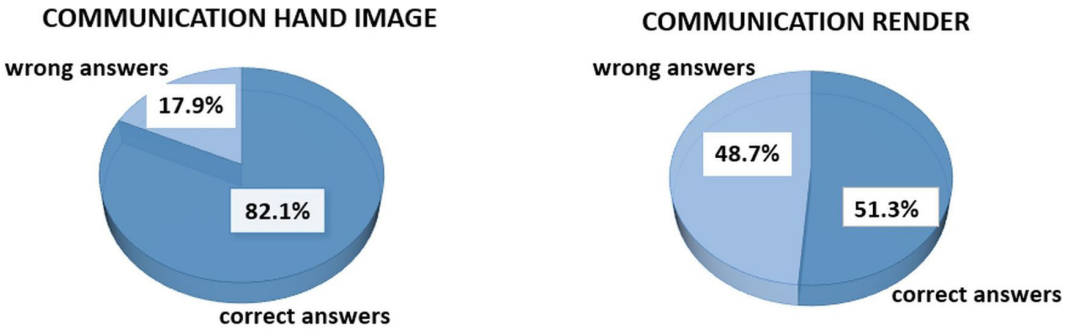

Fig. 4 Gaia Leandri, 2022. *Communication section*. The test on communication detected a very significant difference between the performance on hand drawn images compared to the photographic renders.

preference. The test was a one stem, two choice type (Ng & Chan, 2009). The aim of this section was to detect possible differences between a choice based upon an objective performance and an aesthetical preference, and to demonstrate, if possible, the robustness of the first two sections (communication and recognisability) of the test.

Statistical analysis

Comparisons between the results of correct and wrong answers (classified as categories) to hand drawn images and photorealistic renders (classified as groups) were performed with a chi-square test and a 2x2 contingency table, setting the significance threshold at $p<0.05$.

RESULTS

Communication

The first two tests were aimed at evaluating the ability of the images to convey a specific message. In questions n. 1 and n. 2 (recognizing the correct building in 2 different hand drawing images) the test takers scored an average of 82.1% of correct answers (Figure 4, on the left), compared to the 51.3% of correct answers in the photorealistic render questions (Figure 4, on the right). The difference between correct and wrong answers for the hand drawn

image versus the photographic render performance was very significant, with a chi-square statistic of 8.3077 and p-value of 0.003948.

Recognisability

In questions n. 3 and n. 4 (matching each image with the correct designer) the test takers scored a total of 69.2% correct answers for the hand illustrations (Figure 5, on the left), and 23.1% correct answers for the renders (Figure 5, on the right). The chi square test statistic for the contingency table gave a result of 16.7143 and a p-value is 0.000043, indicating a very high significancy.

The difference between correct and wrong answers for the hand drawn image versus the photographic render performance was very significant, with a chi-square statistic of 8.3077 and p-value of 0.003948.

Both in communication and recognizability, the hand drawn images scored significantly better than the computer-generated images, a clear sign of the greater effectiveness of those images.

Engagement

The last part of the questionnaire, engagement, investigated preference. It was obviously based upon a subjective judgement and provided quite different results from the two previous tests based on the performance of subjects.

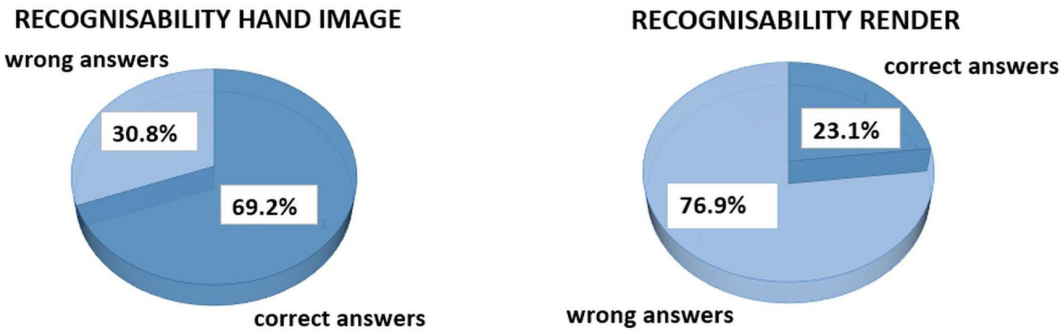

Fig. 5 Gaia Leandri, 2022. *Recognisability section*. The performance in recognisability confirmed the trend seen in communication, with the hand drawn image scoring much better than the photographic renders.

It showed an almost identical percentage (no statistically significant difference) of preference between render and illustration with a slightly better score for illustration (59%) compared to the rendered image (41%) (Figure 6).

DISCUSSION

Hand drawn and photographic rendered architectural images in previous investigations

Dichotomy between digital and hand drawn images has been the object of studies enquiring whether digital images could better be perceived especially as communication of the architect's intents (Bates-Brkljac, 2009, Iñarra Abad et al., 2013). The results were partially dependent on the background of the audience, mainly whether they were architects or other professionals. Computer generated images were generally perceived as more accurate and realistic than traditional illustrations, a characteristic mainly appraised by the non architects (Bates-Brkljac, 2009). Architects preferred artistic images and paid attention to attributes as innovation and functionality, whereas non-architects preferred photorealistic images and paid attention to the wellbeing feeling conveyed by the digital image (Bates-Brkljac, 2011). One more important issue is represented by meeting the consumer's preferences and needs, as already occurs in the field of industrial design (Iñarra Abad et al., 2013; Llinares Millan & Iñarra Abad, 2014) and where digital images are perceived as definitely more realistic, though there might be some reservation as to the consumer's attention not being driven towards the object as much as in a hand drawn image. It is worth noting that in competition juries and even in the academic environment, when architectural or design students are involved, digital imagery are often preferred (Basa & Şenyapih, 2005; Şenyapili & Basa, 2006).

The unreal reality of simulation and the biological ambiguity

No doubt, the production of an image which depicts in all living details and shades of light something yet (or ever) not existing may appeal the general public and apparently make an architectural project more convincing. The likeness of a photorealistic render with an actual photograph, including detailed specific stereotypes of the daily life, makes the simulation hidden and creates in the public extremely positive expectations, not matching with the future more trivial reality.

According to Bernath (2007):

> The co-existence of both the realistic view and the fictional vision as a new simulated reality problematises the distinction between experiences of natural reality and experiences of artificial photo-reality. Rendering cuts through the naïve trust we have instilled in photographic images because our perceptual framework is confused by conflicting messages: 'This must be real!' and 'This cannot be real!' (p. 57)

The permeating advancement of artificial intelligence applied to imagery will permit an ever more exasperated commixture of real and unreal worlds, with ever more undefined boundaries between utopian and dystopian visions. All these are artificial environments creating a com-

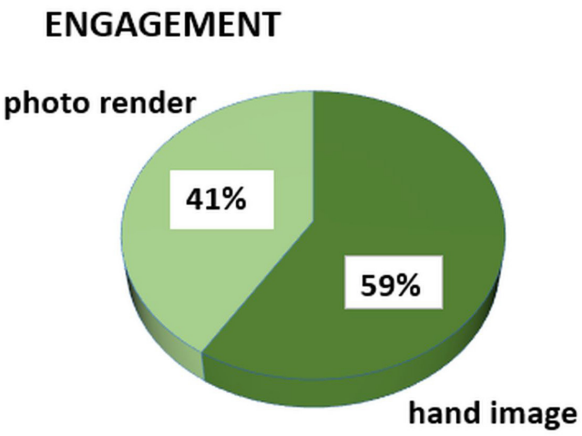

Fig. 6 Gaia Leandri, 2022. *Engagement section*. Test on engagement, which was aimed at recording the subjective preference.

pletely controlled and predictable experience. Such characteristics make the simulation of reality a provider of well being feeling, where the individuality, creativity and ambiguity are ruled out (Scheer, 2014). Although the property of ambiguity in an image may at first be regarded as undesirable, this is a paramount requirement to understand art as it matches the multistable behaviour of the human brain (Yevin, 2006). So, we may surmise that an ambiguous image, like the hand drawn one, will attract attention, will be watched, in contrast to a well defined photorealistic render, where nothing is left to imagination and which will only superficially be looked at. This is why a hand drawn image might better convey the feeling of the author who will permeate it with biological ambiguity and unconscious messages. Such messages, reflecting his creative spirit, can only be received through a handcraft, since no such properties, by definition, can be found in digital systems.

The answers, performance versus preference and the biological basis

The questions were proposed to an educated public, mostly would be architects and designers. It was reasonable to expect that the large majority of them would have provided correct answers whether confronted with hand drawn or photographically rendered images. Nevertheless, the results showed that there were very definite difficulties in detecting the elements that should have singled out each image in the photographic renders of section 1, whilst a large majority of correct answers were scored with hand drawn vignettes. The same result was attained in section 2, where studio styles were easily recognised in hand drawn vignettes but not in renders. We have to assume that the performance of the test takers was dependent on several factors, most of them probably acting below the level of visual conscious perception and leading the decisional process for the correct answer, completely disjointed from aesthetical judgement. On the other hand, the section 3

on engagement asked a preference which demanded an opinion only based upon aesthetical features. Here most subjects that had previously scored better with handmade images, declared to prefer photographic renders. It may be supposed that in this latter case the brain processing of the visual information went through different channels linked to a greater awareness by the subject, mainly based upon "visual primitives" that provide just a selective aesthetical information of the image, without exploring the more hidden messages (Gilbert, 2013). Hence the same individuals could provide two different types of answers: hand drawn images are felt to be less glamorous but carry more relevant information for a business-like decision.

The neural mechanisms of the above process have just started to be understood, and we are still a long way to fully comprehend them. Nevertheless, at a more practical level, it often happens that the architectural illustrator is asked to redraw by hand very realistic photographic renders, that the architect feels do not convey the correct message to the observer. The hand illustration allows a 'control' of the attention of the observer through some graphic tricks –colour, saturation, contrast, detail, and a few others– that might then be processed consciously and unconsciously by the user. By the same token, the illustrator, either consciously or unconsciously characterises the images with a definite personal style, usually identified with the one of the studios. Such elements of communication and identification are lost in a photorealistic image. In this case, the final user can only rely on his/her knowledge of the design style of the architectural object, a knowledge that only specialists share, leaving to the lay public just the chance of a lucky intuition and, so, making things difficult for a correct overall understanding (Bistagnino, 2020). On the contrary, the sign, the signature style of the designer, seems to lead to a more distinguishable and noticeable product, contributing to "selling" the architectural brand (Bardola, 2021; Malagugini, 2018). There is probably an unconscious emo-

tional connection to the personal style of the hand drawn image. Whether in a positive or negative way, it is still recognized as a 'work of art' and not as a digital product of a computerized process where empathy gets lost in the artificial perfection of the image.

Weaknesses of the investigation

The results of the tests can be influenced by the images chosen, so there might be a bias on the side of the test maker. Such drawback, anyway, is present in all tests based upon images and is independent from the test modality. In our case, extra care has been used in choosing images with similar contrast, brightness and possibly style. No instrumental assessment of image qualities has been performed in our investigation; in future research this could better ensure equivalence between image sets.

Recruitment of test takers is another potential distorting factor of test results in general. Of course, the reported investigation was very limited, and it would be interesting to extend the research to wider audiences, also involving people with no architectural experience.

CONCLUSIONS

The architectural imagery is a feature of major importance today as it was in the past centuries. The advent of digital technologies has brought attention to new kind of illustrations, without dwarfing the traditional drawing. Digital drawing tablets are easily available as almost perfect replicas of traditional drawing tools as pencil and paper. Even the haptic sensation of handling the pencil and running its tip on a coarse sheet of paper can be imitated, leaving apart the pressure, inclination, rotation of the drawing instrument. Recently architects and scholars have reassessed manual skill for a better visual communication. Previous investigations had shown that

photorealistic images were judged by observers as more adherent to reality (Bates-Brkljac, 2009; Iñarra Abad, 2014). For this reason, these types of images have widely been used for final presentations of projects. Photorealistic rendering though, while necessary in some circumstances to provide detailed information on future results, may lack qualities that are still relevant in visual communication. This questionnaire, amongst other recent studies, has shown that the freehand illustration, so often discharged in favour of the render, is still the only way for the designer to have full control of the image and its communication ability. Therefore, the two methods should coexist as each of them pursues a different but complementary purpose.

ACKNOWLEDGEMENTS

The investigation reported here is part of the research framework of the Department of Architecture and Design dedicated to the visual language in collaboration with the *Interdepartmental Centre for Visualisation* of the University of Genoa. The tests were run during the seminars held by the author as part of the joint lectures for the *Doctorate in Architecture and Design*, *Doctorate in Digital Humanities* and the teaching programme of the Sea Centre at the University of Genoa.

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Article available at

DOI: 10.6092/issn.2724-2463/16115

How to cite

as article

Leandri, G. (2023). The Architectural Illustrator: A Key Figure in Visual Communication. *img journal*, *8*, 124-145.

as contribution in book

Leandri, G. (2023). The Architectural Illustrator: A Key Figure in Visual Communication. In A. Luigini (Ed.), *img journal 08/2023 Imaging and imagery in architecture* (pp. 124-145). Alghero, IT: Publica. ISBN 9788899586362