

# Digital Hybridisation and Communication of the Design Process. The Case of Animated GIFs

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## Abstract

*The visual codification of architectural representation in the 1920s, in its overt globalisation, is being enriched by a series of analogue-digital hybridisations that greatly broaden the spectrum of expressive possibilities of the early digital era: the maturation of quantitative tools (from BIM to GIS and all their possible derivations) is accompanied by many new qualitative visual containers that are the offspring of a digitalisation which is capable of giving space again to the ways and traditions of manual drawing, in its most diverse declinations. Among these, this paper intends to investigate the growing role played by animated GIFs, short recursive digital animations, in the communication of architectural design. Animated GIFs have been present since years in the landscape of the digital images shared on the web and have become a true professional tool, concise and powerful, capable of conveying a visual storytelling that is much closer than one would think to the established forms of architectural drawing. This type of animation plays on the possibility of condensing a (design and cognitive) process in a few seconds, leveraging the communicative power of the well-established codes of architectural representation, enhanced by the cyclical-temporal dimension. They are small but sharp representation tools that deserve careful evaluation, starting from their effective figurative essentiality.*

*Keywords: Animated GIF, dynamic representation, axonometry, hybridisation, zoetrope.*

## Introduction

One of the most curious characteristics of the digital medium Graphic Interchange Format, better known as GIF, is its anti-cyclical longevity, in a cyberspace essentially founded on the necessity of the planned or accidental obsolescence of almost every language, tool, palimpsest or vector.

On 15 June 1987, at the dawn of the mass distribution of the World Wide Web, the team of researchers from the US company CompuServe, led by chief engineer and computer scientist Stephen Earl Wilhite, released the first version of a new digital graphics interchange format called GIF (Graphic Interchange Format). After registering the acronym GIF, CompuServe released the first technical report online, describing the main features

of the graphical protocol as follows: “‘GIF’ (tm) is CompuServe’s standard for defining generalized color raster images. This ‘Graphics Interchange Format’ (tm) allows high-quality, high-resolution graphics to be displayed on a variety of graphics hardware and is intended as an exchange and display mechanism for graphics images” [1]. Regardless of any technical considerations on the simplicity and effectiveness of the source language model, GIF has been characterised since its inception by its almost unlimited interoperability between operating systems, rapid dissemination and ductility of use on the Net; these characteristics have been essential in its immediate and massive diffusion. Over the course of more than two decades, most of the big players in the digital world, from

providers to browser developers and distributors, up to today's Big Tech Companies, while continuously deploying revamped systems of image-based visualisation and navigation, first static and then animated (Flash, HTML4, etc.), have never abandon the integration of the GIF format, starting from the fateful September 1995, when *Netscape Navigator 2.0* first made it possible the smooth online rendering of a fast loop of animated images based on GIF technology. The GIF format is a chameleon-like medium cyclically capable of conveying digital visual content in different ways, and has strongly come back in the limelight with the advent of social networks and Web 2.0., in its partially updated version capable of generating recursive micro-films based on very few frames. In the virtual space of social networks, chats, *WhatsApp* and all the instant hyper-media messaging alternatives, it was perhaps inevitable that such a simple, manageable and rudimentary container of moving images would lose any tendency towards obsolescence. According to Valentina Tanni: "Animated GIFs are an open and malleable platform, transversal and popular, cheap and accessible: they are easy to make, weigh little and are readable from any browser. They are used as an expressive vehicle for comic or parody purposes, but also as a linguistic element, on a par with emoticons: those known as 're-action GIFs' are indeed able to bolster the expression of emotions and moods in social network conversations, chats and e-mails" [Tanni 2023, p.61].

Today, GIF images are essentially ubiquitous, since they are an integrated and non-replaceable component of digital pop culture, and lend themselves to almost unlimited manipulative possibilities in every media field, from mass communications to the most specific scientific popularisation, as even a curious recent study on mathematics education reminds us: "Based on the application and the data obtained, it was found that using GIF animations can be useful in learning mathematical concepts, algorithms, relations and structures. In addition, visual and educational inadequacies and deficiencies of some existing GIF animations used in this study were identified" [Altitas et. al. 2017, p. 1118].

GIFs can indiscriminately convey almost anything, with an apparent flattening of visual content, which is inherently simple and almost banal; GIFs seem to maintain a vitality that is not uniquely linked to purely technical issues or the economy of the digital world. Actually, this medium is a hybrid between static and dynamic images, photog-

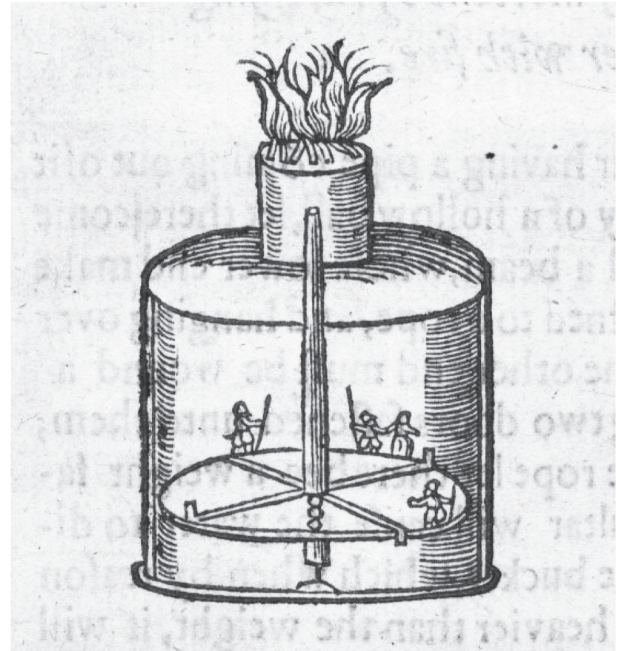


Fig. 1 Rotating Image Lamp illustrated by John Bate in *The Mysteries of Nature and Art*, 1635.

raphy, cinema, micro-animation, so much so that it has become a sort of visual lock pick. A *divertissement* that actually reveals a sometimes unexpected communicative potential. In a way curiously similar the non-fulfilled prophecy of the demise of photography after the advent of cinema, the GIF format resists the unlimited power of contemporary digital graphics precisely because of its apparent mechanical triviality.

After all, the same fate happened to very old optical illusion devices for moving images, such as the zoetrope and the phenakistiscope. The visualisation of moving images has been a human cultural interest for over a thousand years and is now to be rediscovered. The history of the zoetrope is perhaps a case in point.

A predecessor of the zoetrope, dating back about 5,200 years ago, has been discovered in present-day Iran: it is a bowl decorated with a series of clearly sequential images depicting a goat jumping towards the leaves of a tree. The stylised figures are painted in a deliberately

continuous, repetitive and uniform manner, allowing for a stroboscopic effect as the bowl is quickly rotated [2]. It is important to emphasise the Us-based Animation Magazine, which first reported this discovery, in its online version uses a GIF to reproduce the animation on the Iranian bowl in an understandable and communicative way. Much better known and studied is the widespread use of lamps for dynamic looping viewing of images as far back as the first century BC: according to Carlos Rojas, as an example, the Chinese mechanical engineer Ding Huan created a lamp with a circular band decorated with images of birds and animals that moved with particular fluidity when the heat of the lamp created an ascending current able to rotate the band [Rojas 2013. p. 5]. However, in the history of Eastern and Western visual culture there are dozens of possible objects for cyclic animation, with the most exotic names and subjected to subsequent elaborations, some of which quite sophisticated and others simpler and more effective: from the zoetrope described and represented in the 17th century by John Bate (Fig.1), in a work that was very present in the libraries of the time [Bate 1635, p. 31], to the official zoetrope patent with US Patent No. 6,4117 (fig. 2) filed by William Ensign Lincoln on 23 April 1867. Lincoln's version of the 'illusion machine' had, in a nutshell, certain technical and expressive characteristics that we can clearly find in the animated GIF: substantial functional simplicity, rapid content substitution, a static background on which certain foreground elements are animated in a short, incisive flow, portability and ease of generalist use. The zoetrope is a kind of precursor of the animated GIF, a precursor of a visual technique that anticipates and at the same time follows the immersive magic of cinema and the hieratic static nature of photography, standing in a middle ground [Tanni 2023] where we should ask ourselves questions not only about the pervasiveness and longevity of the medium but also about the specificity of the graphic language needed for its success. "Somewhere between photography and video-making, in the middle ground between the still and the moving image, animated GIFs are the perfect content in the multitasking era: "A kind of ubiquitous mini-cinema, entirely native to the personal computer and the World Wide Web," as artist Tom Moody puts it. The reference to cinema is very pertinent, especially if one thinks back to the early days of the filming technique, when experiments were carried out with a few frames and the first mechani-

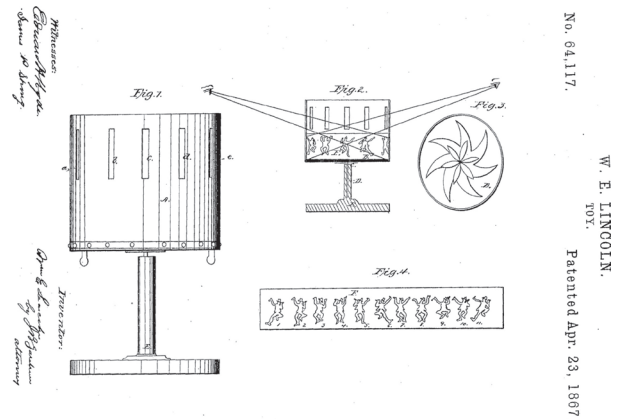


Fig. 2 Illustration for the Zoetrope patent, W.E. Lincoln, U.S. Patent No. 64,117 of April 23, 1867.

cal devices based on the persistence of the image on the retina were born, such as the thaumatrope and the phenakistiscope" [Tanni 2023, p. 73]. However, we should not underestimate certain recurrent specificities in the visual elements present in a whole series of paleo-machines for cyclic animation: from the rigid figure-background relation, where the moving element is mostly simplified precisely because it is subjected to a rapid transition that causes it to lose quality of detail, to the generic and static architectural-landscape spatialisation of some backgrounds, in a sort of neo-pictorial way in which it is impossible to disregard the presence of a visual backdrop as a contrivance to make the dynamic effect even more pronounced. This brief and hypothetical reconstruction of a long genealogy that from a Sumerian vase leads to rotating lamps, thaumatropes, phenakistiscopes and finally dematerialises itself into a small visual element of the digital era, proves to have numerous other interconnections, extensively explored by a certain part of the scientific literature on the birth of animation [Spillen 2022]. And yet, in the face of so many curious links between analogue ancestors and animated GIFs, there remains a clear semantic divide that separates the two branches of this history: animated GIFs are in fact, among other things, one of the building blocks of a new digital aesthetics that was partly born thanks to the incredible ability of GIFs to adapt and resist the evolution of the Web and the succession of countless digital

visual fashions. These micro-loops are able to remain technically unchanged while being able to adapt with incredible speed to unimaginable semantic horizons. Let us think, for instance, of the whole parody strand found on messaging platforms and social networks: it is an endless flood of animations changing constantly, in a visual patchwork beyond any authorial control, in which messages are conveyed with no explanatory or cognitive intention, in a superficial and playful but ubiquitous and pervasive laconism: "Within this recent internet culture, images (and especially GIFs) play a dominant role precisely because they help individuals to avoid declarative commitments in communications and help them remain ironic and ambiguous. Images are indeed more laconic than words. When one searches for a GIF to send a friend in a chat, one is translating words with a greater degree of clear meaning and rationality into images, which carry a greater degree of affective emotional content, and which remain open to interpretation depending on the context. Very often, such ambiguity is tied quite self-consciously to a resistance to make any clear political or ideological claims" [Voet et. al. 2022, p. 9]. In this specific hyper-superficial undergrowth of the contemporary Web, the animated loop amplifies a precise form of *blasé* reaction that each of us tends to develop when faced with the endless daily bombardment of images that are deprived of a reasonable meaning. It is a cognitive response that Michael Meredith defines as 'calculated indifference': "Calculated indifference is not simply another form of postmodern irony in the manner of Venturi. It is also modelled on the purposeful hesitancy, ambiguity, and irony found in recent internet culture more generally. A growing body of literature has emerged in recent years to analyse the particular sensibility of online image culture of 'Internet Ugly' the 'New Aesthetic,' and the political uses of gifs, memes by a younger generation of Millennials and Gen Z" [Meredith 2017, p. 321]. From this specific point of view, the role of animated gifs, in the vast and incongruous contemporary landscape of the Internet, seems to remain limited to *amusement* and a pure taste of the ephemeral, just as it was for its mechanical ancestors, yet it is enough to shift our gaze to the world of digital communication and dissemination of architectural design to understand how much these micro animations reveal a huge potential that is completely different, is even broader and still partially unexplored.

## GIFs and architectural design

The growing exponential influence of large Web-based architectural browsing publications has been an established factor in the world of architectural design for years now. There are many concrete examples of this. One for all is certainly the ArchDaily website: it was launched in 2008, in 2020 had over 350K individual visits per day, and in 2022 claimed as many as 17.9 million visits per month. Trying to delve into the forms, techniques and ways of representing and communicating architectural design conveyed by these great Web vectors is not an easy task, but we are interested here in focusing our attention on some innovations that have animated GIFs at their core and are only apparently small (fig. 3). Starting in 2015, ArchDaily launches an annual competition to reward the best architectural drawings; the drawings pass through its platform, are categorised, and for the first time, the authors include in them a specific GIF section. This is the recognition of an ongoing trend in the transition from the purely technical/quantitative digital design typical of the early CAD and BIM era, to one of an entirely different qualitative/communicative nature compared to the photorealistic and illusory drift of the rendering world. In the early 2010s, designers that were keeping the pace with the transition to Web 2.0 had begun to perceive the need for and grasp the potential of more immediate, lightweight, shareable, dynamic and synthetic forms of visualisation: the GIF platform then seemed a promising 'digital detritus'. It was a matter of leaving its simple technological codification untouched while completely changing its visual codes and their communicative goals. The 2016-2020 editions of The Best Architecture Drawings announced by ArchDaily are a very interesting litmus test to grasp the sense and scope of a conscious, sensible and visually designed use of animated GIFs in architecture (figs. 4-6).

This medium that had hitherto been subject to massive but largely random and uncontrolled development now becomes a platform for questioning certain key themes of contemporary architectural representation.

A first aspect concerns the need to find an effective compromise in the reduction of the sign, towards a further simplification that would allow for generating animations that were at the same time concise and precise, capable of effectively but incisively conveying only a few contents. A second issue is the increasingly less secondary role of

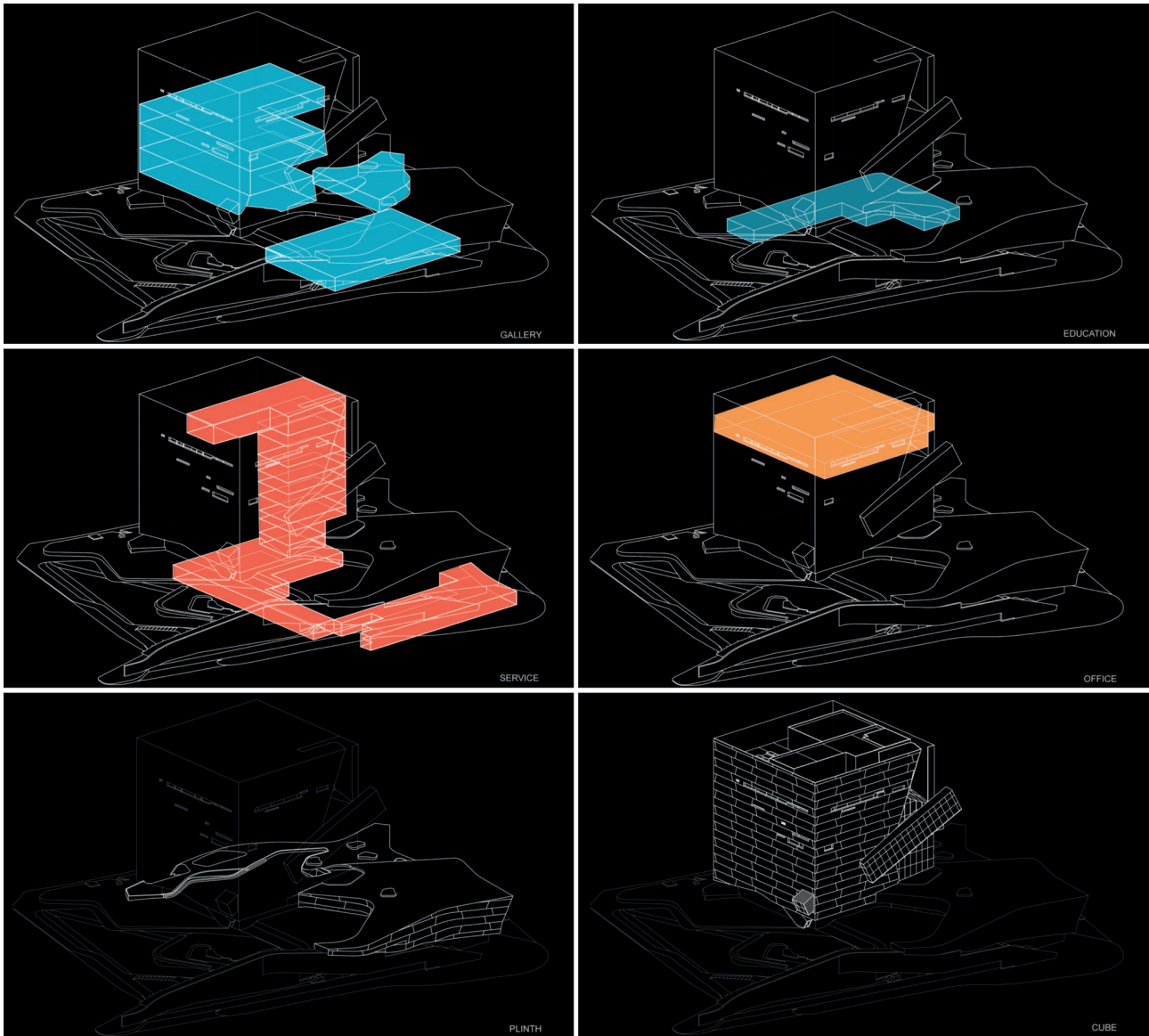


Fig. 3 Frame from the animated GIF on the morphological-functional components of the Perot Museum of Nature and Science, Morphosis Architects, Dallas (TX), 2012, (author's elaboration).

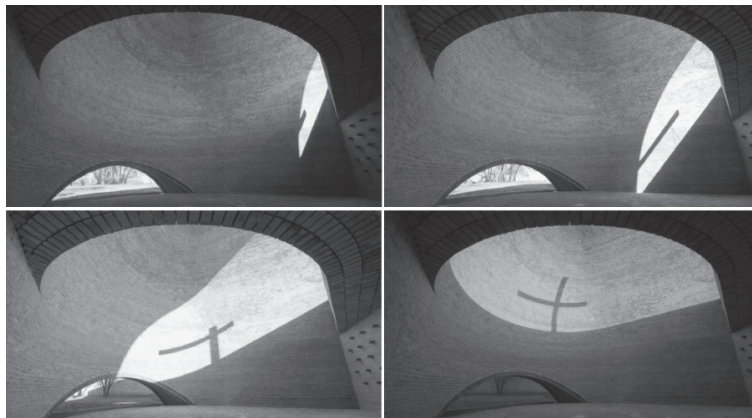
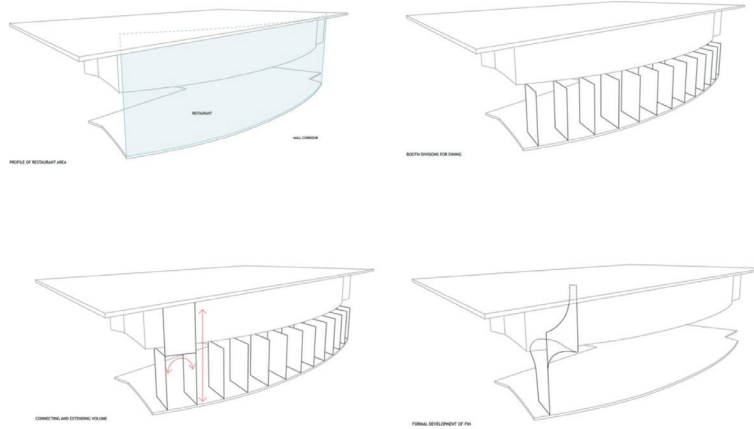


Fig. 4 Frame from the animated GIF of the structural components of the Coffee Shop in Mumbai by Sameep Padora & Associates, 2016, (author's elaboration).

Fig. 5 Frame from the animated photographic GIF on the behaviour of natural light inside the Capilla San Bernardo by Nicolás Campodonico, La Playosa, Argentina, 2015, (author's elaboration).

Fig. 6 Frame from the animated photographic GIF ironically redesigning the openings in the façade of the Zollverein School of Management and Design building at SANAA, 2006, (author's elaboration).

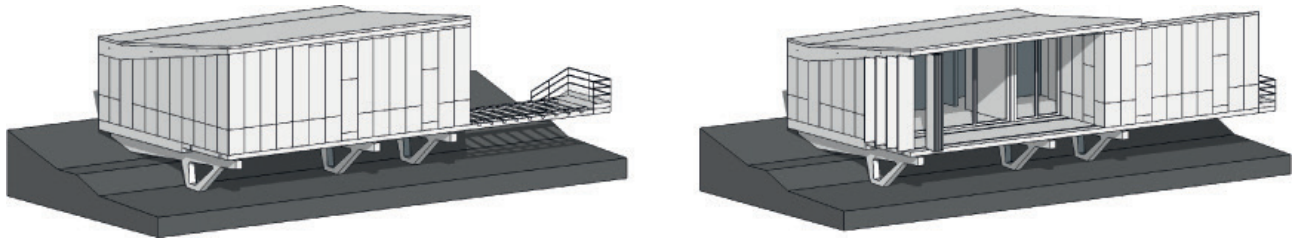


Fig. 7 Frame of the animated GIF related to the moving volume in the holiday home of Maria Giuseppina Grasso Cannizzo, Noto, 2010, (author's elaboration).

representation and visual thinking as tools for communicating architectural design as a complex process and no longer solely as the result of a series of encrypted actions. In this sense, in recent years animated GIFs have been a place to experiment with the return to the centrality of axonometric projection (fig. 7) [Boys 1981] and all its manipulations that are well suited to rapid, cyclic and prehensive animation [Villa 2018]. Online there are dozens of thousands of examples of axonometric line or wireframe exploded views and sections that are made even more expressive by the animated loop, sometimes superimposed on rendered frames, in a kind of augmented axonometry. Digital hybridisation is finally aware of the maieutic effect of certain digital drawing techniques. A third consideration concerns the possibility of mixing and hybridising drawing, photography and collage, which is at the basis of the ductility of this small but powerful micro-animation engine [Altshuler 2018]: the visual storytelling of architectural design can pass through forms, even playful ones, of reinvention, interpretation and manipulation of great interpretative effectiveness, as it happens with some well-known GIFs in which buildings by contemporary architects are disassembled and reassembled in an incongruous manner, allowing us to very quickly grasp some non-obvious compositional assumptions. Through minute but impactful operations of meaning and sign, animated GIFs clearly overcome the limits imposed by their own technical container and a visual culture that seems to relegate them to farce and nonsense. In the field of architecture, GIFs can become, in a matter of seconds, assembly instructions, construction diagrams, visual narratives of the possible use of a space, architectural and urban sections in motion, dynamic synoptic pictures, analytical-interpretive optical illusions and much more.

## Conclusion

In conclusion, an initial synopsis of the operational functionalities of animated GIFs in the contemporary world of architectural design communication can be created, with a series of meanings that on the one side, frame the possibilities related to design knowledge and interpretation, and on the other side, frame the different meanings of dissemination, dissemination and education. Specifically, we can divide these characteristics into:

- concise reading of the context: animated GIFs can effectively illustrate different hypotheses on the relation between architecture and context, allowing for quick and interconnected multi-scenario comparisons, even on different time scales;
- interpretive visualisation of compositional actions: architectural projects often entail a complex design composition process that is not easily conveyed. Animated GIFs allow designers to emphasise some of these design operations in a dynamic way, making it easier and, above all, more effective for stakeholders to understand design matrices and functionality;
- management of internal process effectiveness: animated GIFs, also due to their quick realisation, editing and sharing, can be used as a specific tool for the early phases of the internal design process, as they can facilitate team management of the preliminary conceptualisation phase, which are often based on simple spatial and volumetric operations, and can also allow documenting these early design phases in an innovative digital way;
- phasing: both within the design process as well as in the communication of its results, animated GIFs can be used with a technical/constructive approach to clarify and visualise the possible phases, from

construction to utilisation phase of the artefact, modulating the time sequences according to specific communication needs;

- digital perception and Mixed Reality (MX): GIFs represent a lightweight and affordable solution to assemble and mix different specific Virtual Reality (VR) and Augmented Reality (AR) visualisations that, with more usual media, would be time-consuming and involve large amounts of data. In this case, the simplified vector does not impact on the visual complexity of the communicated content, as it only needs a limited time definition and careful loop design, thus allowing for overview visualisations or reproducing the perception of an architectural walkthrough of different digital models;
- involvement, communication and promotion: animated GIFs, just like their analogue ancestors, keep

a strong seductive and engaging capacity that, together with the speed of message transmission, make them a tool for constructing and sharing micro-narratives about the nature of architectural design, which is much more suitable than static representations;

- training and education: abstract concepts, principles and concrete forms of the design process can find a valuable educational ally in animated GIFs, both because of their being easy to use for the latest generation of digital natives, and because of the ease with which complex spatial messages can be translated into simple, understandable relational elements easy to memorise. This specific aspect makes animated GIFs useful visual mnemonics digital assistants particularly suited to aspects of form, function and use of architectural and urban space.

## Notes

[1] Web Archive – CompuServe GIF standard specification <<https://web.archive.org/web/20181222025600/http://www.w3.org/Graphics/GIF/spec-gif87.txt>> (accessed on July 24, 2023).

[2] Oldest Animation Discovered in Iran. *Animation Magazine*. March 12, 2008.

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