

# Re-Presenting Cultural Heritage with VR Panoramic Photography: Lessons Drawn from Media Art History

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## Abstract

Developing a history of virtual reality (VR) panoramic photography not only in relation to the development of illusion and immersion, but also its content, will allow for a more robust history, so that those who are working within VR panoramic photography are not “reinventing the wheel” and a greater critical discourse may take place as this medium develops. Within a media art history context, past disruptive immersive deliverables include the *vue d’optique*, panorama and stereoview. Nevertheless, a recurring theme, which ties the content used in these deliverables with VR panoramic photography, is the re-presentation of cultural heritage. Using examples of the re-presentation of Middle Eastern cultural heritage from media art history, this essay explores the following questions: how has the re-presentation of Middle Eastern cultural heritage changed or shifted as these technological disruptors have been introduced and used, and how can one use these past innovations to inform contemporary best practices in cultural heritage preservation, interpretation, and dissemination using VR panoramic photography? The paper will conclude with practical, useful recommendations to inform current and future initiatives in developing artistic projects that use VR panoramic photography for the preservation, interpretation, and dissemination of cultural heritage.

## Keywords

Virtual Reality Panoramic Photography, *Vue d’Optique*, Panorama, Stereoview, Middle East, Orientalism, Cultural Heritage

## Introduction

In order to establish a new medium for artistic expression, it is necessary to place it within a historical context of established media—repositioning it from a novelty to an artistic medium. Oliver Grau’s *Virtual Art: From Illusion to Immersion* shifted the notion of virtual reality, in-part, from a purely technological analysis into an art historical context of illusion and immersion—providing a framework

for analyzing works of art that fall under the auspices of virtual art.

Through the practice of media archaeology, histories can be formed in an attempt to understand what are considered new and emerging digital media art practices by both drawing from and examining past media art practices. [1] Nevertheless, while much of media archaeology has been focused on the objects and apparatuses related to media, an important and telling aspect of this quest is the content displayed through the use of the devices.

Developing a history of virtual reality (VR) panoramic photography not only in relation to the development of illusion and immersion, but also its content, will allow for a more robust history, so that those who are working within VR panoramic photography are not “reinventing the wheel,” and a greater critical discourse may take place as this medium develops. Within a media art history context, past disruptive immersive deliverables include the *vue d’optique*, panorama, and stereoview. Nevertheless, a recurring theme, which ties the content used in these deliverables with VR panoramic photography, is the re-presentation of cultural heritage.

It can be argued that the content displayed within the *vue d’optique*, panorama, and stereoview is reflective of the values and interests of the time and place for which they were produced. The popularity of the “factual” content depicted within these media can be seen as a blending of myths, perceptions, and values determined and defined by the needs of its target audience for which they were created. Using examples of the re-presentation of Middle Eastern cultural heritage within media art history, this essay will explore issues related to the depiction of this region’s cultural heritage through these past technological disruptors and how they may inform contemporary best practices in cultural heritage preservation, interpretation, and dissemination using VR panoramic photography.

## Painting, Photography, and Orientalism

When discussing the re-presentation of cultural heritage in the Middle East, it is necessary to understand the complex notion of Orientalism. The term “Orientalism” is used in mainly two contexts: the first is in regard to a genre of painting and photography by a group of primarily European artists, and the second is an academic discipline and its critique, which spans across two continents to include the Far East. [2] In this paper, the focus will be on the former, and writings from the discipline will also be used to discuss issues within a larger context. It should also be noted that this author is defining the Middle East as the geographic locale spanning from Libya to the Arabian Peninsula, which includes Egypt, Sudan, Israel, Palestine, Jordan, Lebanon, Syria, Turkey, Iraq, Saudi Arabia, and the other countries of the Arabian Peninsula. These countries, which are unique among themselves in regard to customs and traditions, are bound together by their historic and cultural connections. This paper is not intended to be a comprehensive study, but an introduction to the complexities associated with re-presenting cultural heritage in order to hopefully create more culturally sensitive depictions using the technology and tools available in our time with a focus on VR panoramic photography.

Visual “documentation” of the Middle East began in 1798 when Napoleon’s fleet arrived off the coast of Egypt. It was the beginning of European expansion into an area that was previously considered inaccessible to Europeans. [3] In 1838, François Arago, a French astronomer and politician, urged that the new invention of photography be used in the continuing efforts of documenting Egypt that had begun under Napoleon. [4]

With respect to painting and photography, the objective of the “Orientalist” was to accurately record the visual landscape, from ancient monuments to contemporary life to the natural environment. However, where the “documentation” falls short in this endeavor was in the practice of artistic license, where artists had personal agendas or preconceived notions. Nevertheless, these shortcomings provide insight into Western beliefs of the time, blending myths, preconceptions, and values determined and defined by the needs of both the creators and their target audiences. While photography and painting may be considered two very different mediums, it can be argued that Orientalist photographers are aesthetically indebted to their painter counterparts in regard to subject matter and formal concerns.

In *Camera Orientalis*, Ali Behdad argues that if Orientalism is understood as a web of aesthetic, political, and economic associations, as argued by Edward Said, then it can be used as an indispensable mechanism to the understanding of the depiction of the Middle East in nineteenth- and early twentieth-century painting and photography. Behdad writes, “The circular relation between Orientalist painting and photography at once

complicates notions of artistic influence, originality, and origin, compelling us to consider Orientalist representation as the interplay of formalistic and discursive relations. The sometimes suspicious attitude among art historians and museum curators toward Said’s discussion of Orientalism as a discourse of colonial power has obscured the crucial links between painters, photographers, archaeologists, writers, and travelers, and how their practices and discourse have influenced each other”. [5]

It should be noted that the cultural heritage re-presentations discussed in this paper move outside what some may consider the realm of “fine art” painting and photography and into the domain of the media arts by focusing on Middle Eastern re-presentations depicted within the *vue d’optique*, panorama and stereoview.

## Vues d’Optique and the Middle East

Prior to the arrival of Napoleon’s fleet into Egypt in 1798, the *zogrscope*, an eighteenth-century optical device, was introduced. When the viewer looks at a *vue d’optique*—a type of etched, linear-perspective print—through the lens of the *zogrscope*, an enhanced illusion of distance is produced. The *vue d’optique* is generally characterized by an elevated view of an architectural scene with an open area at the bottom center of the composition that utilizes exaggerated depth cues to create an enhanced depth experience when viewed with the *zogrscope*. While most *vues d’optiques* were produced from 1740 to 1790, people were engaged with this type of spectacle within the confines of affluent homes from the early eighteenth century to the beginning of the nineteenth century. [6]

The *vue d’optique* subject matter is primarily topographical, showing cities, towns, palaces, churches and monuments from around the world. Inhabiting these “virtual” spaces to help enhance the monumental scale, individuals and/or small clusters of people—minute in scale—are engaged in such activities as gazing at the architectural elements and conversing among themselves.

By selecting one or a series of prints—alone or with others—a viewer could partake in a virtual journey to locations familiar or unknown. From France to Russia to Egypt, to the past or present day, these prints would provide viewers with a glimpse into the world around them within the confines of their home. Nevertheless, while some views were more accurate, others seem to have been invented, which appears to be the case in many scenes depicting the Middle East.



Fig. 1. *Les Pyramides de L'Egypte*, ca. 1770, Georg Balthasar Probst, vue d'optique, Private collection

For example in the vue d'optique *Les Pyramides de L'Egypte* (ca. 1770), German artist and engraver Georg Balthasar Probst (1732–1801) creates an imaginative and whimsical scene of Egypt (fig. 1). Depicted within the composition is a busy plaza surrounded by what appear to be obelisks and a pyramid. In the lower center, a king is being shown plans for a design, and throughout the etching, people are depicted building, chatting, and going about their everyday business. The clothes, however, do not read as Egyptian but rather as Ancient Roman and Medieval European, and the distant mountains suggest a European landscape as opposed to that of North Africa. Probst has either intentionally or inadvertently exoticized Egypt through his fanciful rendering.

### The Panorama, Constantinople and British Imperialism

At the end of the eighteenth century, a new form of immersive image environment was introduced: Robert Barker's 1787 invention, the panorama. Built with a centrally located platform for viewing, the panorama consists of both a building and a cylindrical 360-degree painting housed inside its rotunda, which is usually covered by a cupola or cone-shaped roof. After entering the panorama building, the viewer would go through a long hallway to the center and ascend, most likely, a spiral staircase to an elevated viewing platform, much like a covered gazebo—requiring the viewer to remain within a certain perimeter to maximize the illusion. While the vue d'optique *Les Pyramides de L'Egypte* falls in the range of the imaginative, the goal of the panorama according to Barker's patent needs to be accurate and provide “an entire view of any country or situation”. [7]

In the late eighteenth century, London was fast becoming one of the first great cities, and Robert Barker built his panorama building to accommodate people who sought a reprieve from city life. The panorama was an

early form of mass-media entertainment. Barker's panorama building, located on Leicester Square, was inaugurated on May 25, 1793. Designed by Robert Mitchell, the structure's atypical panorama building could accommodate two panoramas at once—one large and one small; most other panorama buildings were designed to accommodate only one. [8] Panorama subject matter exhibited at Leicester Square depicted places from the near to the faraway, and from battle scenes to the majestic.

Constantinople, now known as Istanbul, was considered historical, exotic, and charming by the eighteenth-century English. When Britain joined forces with the Ottoman Empire to defeat Napoleon, Constantinople was regularly in the British newspaper headlines, which created a greater curiosity for Londoners about the city. Henry Barker, Robert's son, sought to capitalize on this interest by traveling to Constantinople to create preliminary sketches and studies for his panorama exhibition. While Barker originally intended to produce only one, in the end he did two—one contemporary (European side) and one that was more historic in nature (Asiatic side). [9]

From November 23, 1801 to May 15, 1802, Barker showcased the two panoramas of Constantinople at the Leicester Square Rotunda. The “view from the European side,” depicted from the Tower of Galata, was displayed within the larger exhibition space, and the “view of the Asiatic side,” shown from the Tower of Leander, in the smaller one, allows for an interesting juxtaposition for comparing and contrasting. [10] It should be noted that the viewpoint from which each was painted is visible within its respective panorama.

While the panorama paintings no longer exist, Denise Blake Oleksijczuk pieces together the two panoramas by analyzing their descriptive keys with associated text, as well as the souvenir prints from the Tower of Galata panorama in her book *The First Panoramas: Vision of British Imperialism*. In her analysis, she argues that the larger panorama of the European side depicts a contemporary, early nineteenth-century Constantinople as an “eclectic mix” of building styles, with figures in both Turkish and British dress. In the “Asiatic side,” the painting depicts a more “ancient” re-presentation with undefined members of the Ottoman Turkish elite wearing traditional attire, which may have been done to cater to Britain's fascination with the Orient in terms of its perceived difference. In both panoramas, the British ambassador's ship is shown reinforcing the idea that Constantinople is a friendly ally to the British. Additionally, Oleksijczuk contends that the descriptive souvenir sheets for both panoramas further highlight these differing treatments of modern and traditional depictions of Constantinople. [11]

Oleksijczuk argues that the panoramas, as exhibited together, articulate a dominant representation of British power when she states, “By collectively participating in deciphering the two panoramas of Constantinople,

spectators acceded to a view based on the systematic articulation of power that the panoramas set in place. The mobilization of the authority of the European view that lay hidden in the representations became a way to incorporate spectators into the British empire.” [12] In other words, one culture’s depiction of another can influence how a culture is perceived and may tell more about the artist’s disposition and the culture for which the cultural representation is being made, than the one being depicted.

### Egypt, the Advent of Photography, and the Stereoview

In 1838, Sir Charles Wheatstone invented the earliest type of stereoscope, which is a device for viewing a pair of separate images, depicting left-eye and right-eye views of the same scene, as a single three-dimensional image. With this invention, along with the invention of photography (1839), the collodion wet-plate photographic process (1850) and Sir David Brewster’s modified version of Wheatstone’s stereoscope (1849), which made stereoscopic viewing more portable, the stereography business was born. [13] One of the early leaders in stereoview publishing was the London Stereoscopic Company. Founded in 1854, the company was selling a million cards a year by 1862, with more than one hundred thousand titles from which to choose. [14]

Due to the technical limitations associated with the long exposure times necessary in early photographic processing, the Middle East region was identified as an ideal location for image making because of its bright light. On January 19, 1839, Dominique François Arago announced to the Academy of Sciences, “Now how long a time does the light require to execute this operation? In our climate, and in ordinary weather, eight or ten minutes, but, under a pure sky, like that of Egypt, two, perhaps, one minute, might suffice to execute the most complex design”. [15]

Furthermore, Arago explains the advantages of photography over painting and drawing in the documentation of Egypt’s ancient artifacts and monuments in a report to the Commission of the Chamber of Deputies on July 3, 1839:

To copy millions of hieroglyphics which cover even the exterior of the great monuments of Thebes, Memphis, Karnak, and others would require decades of time and legions of draughtsmen....Equip the Egyptian Institute with two or three of Daguerre’s apparatus, and before long on several of the large tablets of the celebrated work, which had its inception in the expedition to Egypt, innumerable hieroglyphics as they are in reality will replace those which now are invented or designed by approximation. These designs will excel the works of the most

accomplished painters, in fidelity of detail and true reproduction of the local atmosphere. [16]

Much of early photography borrowed from painting, and a popular genre of the time in Britain was landscape painting, which explored the notion of the picturesque—and tended to exclude signs of modernity and progress. [17] The picturesque and its application to the stereoview, in part, also helps achieve greater depth effects with its delineated foreground, midground and background formula.

Following in the footsteps of such early U.K.-based stereoview photographers as Francis Frith and Frank M. Good, who embraced the notion of the picturesque within their stereoviews by focusing on a historical depiction of Egypt as opposed to a contemporary one, US-based Underwood and Underwood’s 1905 Egypt Boxed Stereoview Set followed suit. The set included one hundred stereoviews with an accompanying book and maps to educate its users on “the customs, history and monuments of the ancient Egyptians” through its early twentieth-century version of a virtual tour. [18]

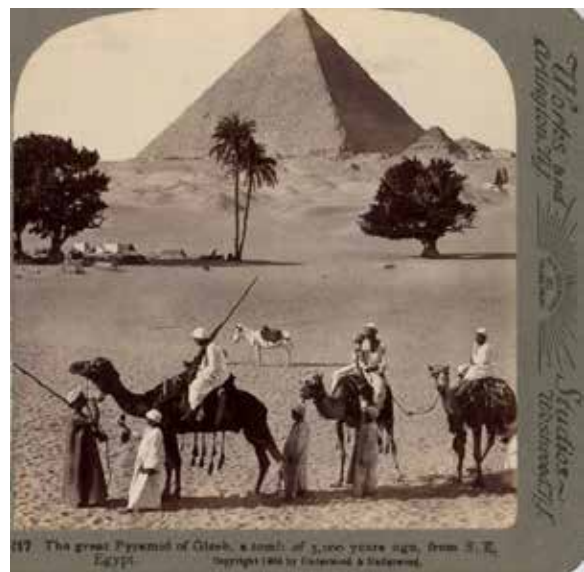


Fig. 2. *The Great Pyramid of Gizeh, a tomb of 5,000 years ago, from S.E. Egypt (detail), 1904, Underwood & Underwood, stereoview. Private collection*

When photographers depicted contemporary Egyptians of the time within their stereoviews, they are usually dressed in traditional Egyptian attire and typically appear to be dwarfed by the ancient ruins (fig. 2). James Henry Breasted writes in the book *Egypt through the Stereoscope*, which accompanies the stereoview set:

Egypt still survives with a people of the same mental characteristics and the same physical peculiarities as we find in those subjects of the

Pharaohs who built the pyramids. They have changed their language once and their religion twice, but they are still Egyptians as of old, pursuing the same arts, following the same occupations, holding the same superstitions, living in the same houses, using the same medicines, and employing the same devices for irrigation and cultivation of the fields, which the student of the monuments finds among their ancestors five thousand years ago. [19]

From Breasted's quote, the reader infers that life has remained relatively unchanged for the past five thousand years for the Egyptians, except for language and religion shifts. Throughout Underwood and Underwood's Egypt Boxed Stereoview Set and its accompanying book, the historical and the exoticism of the "other" through the Western lens are accentuated, and the modernization that was occurring since the early nineteenth century in such places as Cairo is reduced or credited to European influence. Whether inadvertently or intentional, Underwood and Underwood's Egypt Boxed Stereoview Set establishes a distinction between the viewer of the stereoview set as modern and civilized and, many times, those within the stereoviews as exotic and backward—making politics and aesthetics indistinguishable.

## VR Panoramic Photography and Cultural Heritage

VR panoramic photography is the science, art and practice of creating interactive and navigable immersive 360-degree screen-based images, which usually depict a place and/or event. A VR panoramic image not only has the ability to act as an object, whether stand-alone or within a larger project, but it can also serve as an interface. VR panoramic photography has the following distinct attributes, which reveal not only its homage to the painted panorama but also convey its potential within the digital domain:

- *Immersive*: provides an experience or suggestion of being in a simulated three-dimensional environment;
- *Integrative*: allows image, sound, and text to be combined into a dynamic 360-degree panoramic form;
- *Interactive*: permits users to affect and control their experience with the panorama, and potentially engage with others through its interface; and
- *Hypermedia*: has the potential to link separate media objects (text, image, sound, video, other panoramas) to one another when the VR panoramic image is used as an interface. [20]

With such head-mounted display (HMD) devices as the Oculus Rift and Google Cardboard, VR panoramic images can now be viewed within a completely immersive environment. By using VR panoramic photography as a tool for documenting cultural heritage sites and related events, one may:

1. Incorporate hypermedia elements (e.g. text, image, video, sound) to provide additional and/or more in-depth information for further learning;
2. Encourage input from users along with the possibility of the exchange of ideas between users using interactivity; and
3. Facilitate dialogue with the history of the site and/or event, which can foster increased levels of engagement with cultural heritage

In *From Rags to Riches: A Story of Abu Dhabi*, Mohammed Al-Fahim writes:

The peoples of the Arabian Peninsula have long been blessed with a rich oral tradition through which knowledge, experience, and wisdom are passed from one generation to the next. Many of the important events of our history are not recorded anywhere but in the memories of our people. They live on in the stories, myths, and legends that our sons and daughters are told by senior family members. Woven together, these stories form the colourful tapestry of our past. [21]

Al-Fahim continues:

Countless generations of our people have lived and died without a trace because there are no written records of their lives and achievements.... Although our rich history goes back many centuries, only bits and pieces of the last several decades have been written by our own historians and scholars. We are in a lamentable position. We must study the past from the perspective of foreigners, using their old documents and photographs in our research. The past as seen through the eyes of our own ancestors is lost forever, simply because most of our fathers and their fathers could not read nor write. [22]

Digital media has the potential to provide a platform for Al Fahim's "colourful tapestry of our past" by being a vehicle for a dynamic two-way engagement with heritage culture—allowing users to learn, question and engage.

Building upon the notions of hypermedia and interactivity within VR panoramic photography, Facebook's *Spaces* app, in part, illustrates the potential of VR panoramic photography for cultural heritage

interpretation, dissemination, and engagement. At the time of this writing, Facebook's *Spaces* app is still in beta and works in conjunction with the Oculus Rift to create an immersive image space for "friends" to interact with each other, watch movies communally, play games, and engage in conversation. One may also choose his or her surroundings by selecting available photo or video spheres. [23] By creating apps similar to the Facebook *Spaces* project for cultural heritage re-presentation and engagement in conjunction with VR panoramic photography, content providers may build more communal learning spaces that encourage learning, collective memory and interpretative experiences.

### Concluding Remarks

From the *vue d'optique*, panorama and stereoview examples presented in this paper, the following is revealed: 1) the construction of knowledge is based on one's experiences and preconceptions as seen through Probst's depiction of Egypt and its pyramids; and 2) when re-presenting another culture or subculture, one is at risk of personal and cultural biases based on his or her own experiences and outlook, as shown through the analysis of the Constantinople exhibition at Leicester Square and the re-presentation of Egypt's cultural heritage through Underwood and Underwood's *Egypt Boxed Stereoview Set*. These re-presentations are a complex interlacing of practices and systems that reconfigure the Middle Eastern cultural landscape as an exotic other, and should be perceived, in part, as a cautionary tale on how to approach future cultural heritage projects—reinforcing the value of placing VR panoramic photography into a historical context.

In this author's opinion, the goal of tangible cultural heritage re-presentation is to close the void between the virtual experience and the actual physical engagement with the site. Nevertheless, heritage dissemination requires a humanistic component, or it risks becoming sterile and irrelevant to people's lives. What makes heritage so compelling is when one can engage with it—remembering, learning, and creating new memories. Using VR panoramic photography as an object and/or interface, which employs digital assets such as images, video, audio and text in conjunction with communication technologies that allow users to interact and collaborate with each other, not only enables one to learn, question, and engage in ways that have not been possible before, but potentially allows for greater inclusivity that celebrates diversity and mutually enriching personal and cultural exchanges.

### Notes

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4. Ali Behdad, *Camera Orientalis: Reflections on Photography of the Middle East* (Chicago: University of Chicago Press, 2016), 2; Mary Warner Marien, *Photography: A Cultural History* (Boston: Pearson, 2015), 44.

5. Behdad 2016, 25–26.

6. C. J. Kaldenbach, "Perspective Views," *Print Quarterly* 2, no. 2 (1985): 87–104, accessed July 7, 2017, <https://kalden.home.xs4all.nl/auth/perspectiveviews.htm>.

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8. Bernard Comment, *The Painted Panorama* (New York: Abrams, 1999), 24.

9. Denise Blake Oleksijczuk, *The First Panoramas: Visions of British Imperialism* (Minneapolis: University of Minnesota Press, 2011), 110.

10. *Ibid.*, 94.

11. *Ibid.*, 112–13.

12. *Ibid.*, 125.

13. Douglas Heil, *The Art of Stereography: Rediscovering Vintage Three-Dimensional Images* (Jefferson, NC: McFarland and Company, Inc., 2017), 5–6.

14. *Ibid.*, 10.

15. Behdad 2016, 22–23.

16. Dominique François Arago, "Report of the Commission of the Chamber of Deputies," in *Classic Essays on Photography*, ed. Alan Trachtenberg (New Haven, CT: Leete's Island Books, 1980), 17.

17. Rachel Teukolsky, "Stereoscopy and the Global Picturesque," in *Traveling Traditions: Nineteenth-Century Cultural Concepts and Transatlantic Intellectual Networks*, ed. Erik Redling (Berlin: De Gruyter, 2016).

18. James Henry Breasted, *Egypt through the Stereoscope* (New York and London: Underwood and Underwood, 1905), 11.

19. *Ibid.*, 18.

20. Seth Thompson, "VR Panoramic Photography and Hypermedia: Drawing from the Panorama's Past," paper presented at the 21st International Symposium on Electronic Art, Vancouver, Canada, August 14–19, 2015.

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21. Mohammed Al-Fahim, *From Rags to Riches: A Story of Abu Dhabi* (London: The London Centre of Arab Studies, 1995), 15.

22. Ibid., 188.

23. Lisa Eadicicco, "Inside Facebook's Plan to Take Virtual Reality Mainstream," *Time*, August 2, 2017, accessed August 25, 2017,

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## Author Biography

Seth Thompson is Associate Professor in the Department of Art and Design at the American University of Sharjah, as well as a media artist and writer involved in documenting and interpreting art, design, and culture through print and online presentations. His research interests and practice primarily focus on the interpretation and representation of visual culture and heritage using panoramic imaging and hypermedia systems. Media art history, with special emphasis on the panorama, plays an

integral role in this theoretical and practice-based investigation. Thompson holds a BFA in Studio Arts from the University of Colorado at Boulder, an MA in Visual Arts Administration from New York University and an MFA in Visual Art from Vermont College of Fine Arts. He is the President of the International Panorama Council (2017-2020), a member of the International Art Critics Association and has lived and worked in the United Arab Emirates since 2006.