

PANORAMA

International Panorama Council Journal, Volume 1

(Re)Thinking the Panorama

Selected Proceedings from the 26th IPC Conference

Edited by

Seth Thompson

Blagovesta Momchedjikova

Sylvia Alting van Geusau

Thiago Leitão de Souza

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International Panorama Council

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Editors: Seth Thompson, Blagovesta Momchedjikova,
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Preface

Founded in 1992, the International Panorama Council (IPC) is the international organization of panorama specialists, committed to supporting the heritage and conservation of the few existing panoramas dating from the 19th and early 20th century, and the promotion of knowledge and awareness of the panorama, including its current relevance and development. Since the organization's beginnings, annual conferences have been held worldwide. The yearly IPC Conferences are intense encounters, connecting the past, present and future of the panorama phenomenon. IPC is a non-government and not-for-profit association, according to Swiss law.

In 2017, the peer-reviewed *International Panorama Council Journal* was established in order to stimulate and foster worldwide interdisciplinary research on the panorama and its related forms.

The focus of this inaugural edition of the *International Panorama Council Journal* is based on the 26th International Panorama Council Conference's theme, "(Re)Thinking the Panorama," which explores the panorama's original definition in an effort to further understand how it has affected contemporary media art forms as well as the panorama's impact on art, technology, and society. The Conference was held at the Queens Museum located in New York City, September 29 – October 1, 2017.

On behalf of the International Panorama Council membership, we would like to thank Hitomi Iwasaki and the Queens Museum for hosting a successful conference. We would also like to acknowledge the great efforts of Ruby Carlson, Blagovesta Momchedjikova, Patrick Deicher, Thiago Leitão de Souza, and Sylvia Alting van Geusau for their contributions to the conference and journal.

Seth Thompson
IPC President

Sara Velas
IPC President, 2014-2017

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Panstereorama Mania: When One Model Simply Isn't Enough

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Abstract

Panstereoramas, also known as scale models, are a curious member of the larger panorama family: they are comprehensive and detailed but, unlike painted panoramas, they are three dimensional, horizontal, and surrounded by their viewers. Their biggest illusion-making strategy is not perspective, as with painted panoramas, but miniaturization. Here I explore the implications of city panstereoramas, in particular, *The Panorama of the City of New York* in the Queens Museum, and a new exhibit at Times Square, *Gulliver's Gate*, in terms of accuracy, authenticity, and heritage. Ultimately, I ponder the role of panstereoramas as agents of difference.

Keywords

Scale models, panoramas, pansteroramas, miniatures, cities, *The Panorama of the City of New York*, *Gulliver's Gate*, accuracy, authenticity, heritage.

Demystifying Panstereoramas



Fig. 1. The Brooklyn Bridge at *Gulliver's Gate*. Credit: *Gulliver's Gate*, New York.

Many are the names by which we refer to miniature structures and environments (See Fig. 1), displayed in museums, architectural offices, toy stores, or theme parks: scale models, maquettes, relief maps, 3D maps, dioramas, 3D panoramas, and the rather unusual, slightly mysterious term “panstereoramas.” It is the etymology of this last term (“pan,” Greek = all; “stereos,” Greek = solid; “horama,” Greek = view), however, that clearly links models to 360 degree painted panoramas. The painted panoramas—two-dimensional, comprehensive, and vertical—represented cities, battles, and nature landscapes, while being displayed on the inside of a cylindrical surface. Forever associated with the name of Englishman Robert Barker, who both coined the medium and the term “panorama” in 1792—those 360 degree wonders placed the viewers inside themselves, surrounding them (See Fig. 2).

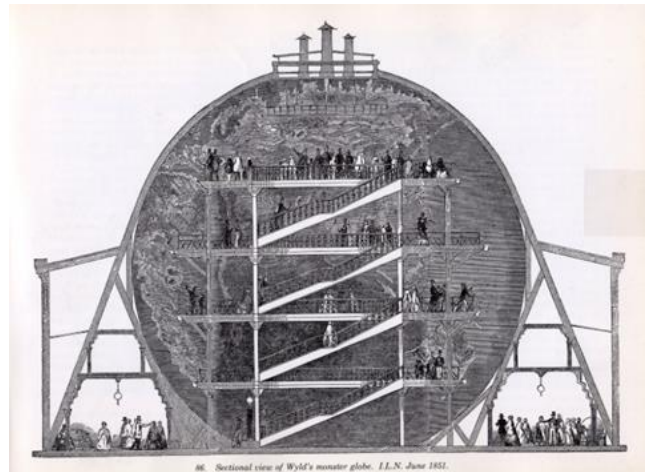


Fig. 2. Cross-section of James Wyld's *Great Globe*, at London's Leicester Square (1851-1862). All the earth's continents and oceans were reproduced on the inside surface of the sphere and were viewed from four central platforms, located one above the other. Credit: Guildhall Library, Corporation of London.

Panstereoramas, though also comprehensive, were three-dimensional, solid, and horizontal, placing the viewers outside themselves instead, from where the viewers could surround them (See Fig. 3).



Fig. 3. Ascending walkway for visitors surrounding the largest model of an urban environment in the world—*The Panorama of the City of New York* in the Queens Museum, New York City. On view is the temporary installation *Never Built New York* (Sept. 17, 2017-Feb. 18, 2018). Credit: Nikola Bradonjic.

Here is what a simple comparison between the two different media may look like:

<u>Panstereorama</u>	<u>Painted Panorama</u>
3D model	2D painting
flat display	circular display
display table	rotunda (circular building)
bird's eye view	360 degree view
smaller than viewer	larger than viewer
experienced from periphery	experienced from center
horizontal	vertical
surrounded by viewer	surrounding the viewer

In his seminal book *The Panorama: History of a Mass Medium*, Stephen Oettermann defines panstereoramas as “relief models of cities or landscapes such as are frequently displayed today in museums,” further specifying that those from the early 19th century were “horizontal and rested on a table or base up to 30 sq. ft. in size.” Carved “from limewood,” they were portable and used for promotions and fundraisers, being “taken from city to city by traveling showmen.” [1]

Shipbuilding since the ancient times, military strategy and the study of fortification design since the 15th century in Italy and France, and the display of royal grandeur under Louis XIV in 17th century Paris, all contributed to the development and perfection of the craft of model making. Indeed, models present an opportunity to project what could be built, to display what is already in existence (See Fig. 2), or to commemorate the past: “Modeling is a way of knowing, whether it projects back to a past that must be imagined into completeness or forward to what has not yet been experienced,” posits Barbara Kirshenblatt-Gimblett in her study of various heritage sites, *Destination Culture: Tourism, Museums and Heritage*. [2] Models are thus

descriptive or prescriptive, depending on their relationship to time, place, and events.



Fig. 4. A close-up on Midtown, Manhattan on *The Panorama of the City of New York*, Queens Museum. Credit: Queens Museum, New York.

The representation of cityscapes became associated with the word panstereorama only in the very beginning of the 19th century, in Paris, when, on May 4th, 1801, a different panorama of Lyon goes on display: “the objects in the panorama were depicted in relief rather than painted,” and this was not deemed a successful “experiment.” [3] Concerns about lighting such a representation that was not a “vertical relief” were real: “...in the usual rotunda lit by skylights, any three-dimensional protrusions would have cast awkward shadows and destroyed the overall effect.” [4] Canon Meyer is way more abrupt in judging this display. Says he:

The craze for innovation and imitation in Paris has given the pleasant-sounding word panorama a hideous companion, although the thing itself is not new at all: Panstereorama is the name of a model of the city of Lyon and its environs in carved wood relief, now on display at the Pavillon d’Hannovre. The model is seventeen feet long and ten feet wide, and corresponds to an area with a circumference of eight French miles. The houses are three inches high and the tiny streets, trees, and footpaths across the fields have been carved with the greatest care and precision. One admires the bas relief of the panstereorama more for its painstaking craftsmanship than as a work of art. Its

maker has been most creative in giving it an epithet—microstereique—that is a true tongue twister. [5]

He reserves his admiration only for the painted panoramas, also displayed at the same time:

“A third panorama on this boulevard shows the city of Lyon. In the beauty of its depiction, the magical effect of the lighting, and the power of the brush it is at least as excellent as the picture of Toulon. The view is taken from the hill on which the castle stands. On one side there is a clear view all the way to the distant snow-capped mountains of Switzerland, before which lies a vast landscape intersected by the Rhone. On the other, dark and massive storm clouds are approaching the city. The storm is driving small clouds before it; one can almost see them coming closer. The illusion is complete, and the greatest of them is this: that as the procession of clouds passes above Lyon, they cast shadows on different parts of the town. One can hear the rolls of distant thunder and feel the first gusts of wind; indeed one feels an urge to take shelter under the nearby castle towers before the storm breaks. [6]

These differences in the description and initial reception of panstereoramas and panoramas point to another intriguing dissimilarity between the two forms of display, despite the fact that they share “the same desire to reproduce a particular region as precisely as possible, to create an exact duplicate,” as Oettermann points out: each achieves its illusion-making on different terms, namely, the panorama uses perspective, while the panstereorama—miniaturization. This may have affected the initial reception of panstereoramas in contrast to panoramas: “For the average person whose eye was untrained in art,” posits Oettermann, “the three-dimensional form of the relief required less sophistication and abstraction.” [7]

And yet, pansteroramas gained in popularity, albeit “under various names”: in the first two decades of the 19th century, they often appeared displayed together with panoramas. [8] In fact, by then, many considered them an art form in their own right: August von Kotzebue, in his memoirs from 1804, writes that:

“In two rooms here one can see Paris, Lyon, and London—all beautifully carved en relief. In the case of the first two cities even the irregularities of the terrain have been taken into account, and this pleasing art form creates quite a vivid impression of the area shown.” [9]

This latter description points to an expectation the fulfillment of which may have further contributed to the popularity of models: authenticity. Once a representation includes “even the irregularities of the terrain,” we know that the attention to detail must be remarkable, which reinforces the accuracy of the replica. And accuracy

confirms the authenticity of the representation: if something is represented true to reality then it must carry the stamp of authenticity. Authenticity, of course, has a particular appeal. Says Dean MacCannell in his famous study of the meticulously planned (or “staged,” as MacCannell calls it) authenticity in tourist settings: “once tourists have entered touristic space, there is no way out for them so long as they press their search for authenticity.” [10] Indeed, with panstereoramas, as with panoramas, viewers familiar with the environment that the medium represents, naturally search for confirmation of what they are observing in the replica, by identifying known places from the real world. One may even argue that the never-ending appeal of panstereoramas lies in our fascination with miniatures: not just any miniature but a miniature we recognize from the real city. Yet, in *Destination Culture: Tourism, Museum, and Heritage*, Barbara Kirshenblatt-Gimblett encourages us to think slightly differently about authenticity: not as belonging in the exhibit itself but in how it was made: “Authenticity,” she observes “is located not in the artifacts per se or in the models on which they are based but in the methods by which they were made—in a way of doing, which is a way of knowing, in performance.” [11] And so, how are panstereoramas made, or rather, how is their authenticity performed?

The Panorama of the City of New York

To begin answering these questions, we can consider one very special panstereorama that has been in existence for over half a century, namely, *The Panorama of the City of New York*, the most prized permanent exhibit of the Queens Museum, in New York City (See Fig. 5). A comprehensive model of the five boroughs of the metropolis, *The Panorama of the City of New York* is legacy of the New York World’s Fair of 1964/65 and the infamous city builder Robert Moses, who commissioned it for the fair. It occupies 9,335 sq. ft. of a single gallery floor in the museum and is experienced from a circumferential, elevated ramp along its periphery. In the scale of 1 to 1,200, which makes the Empire State Building only 15 inches tall, and with close to 900,000 custom-made and standardized structures, *The Panorama* prides itself on being error-free: based on the best geological and survey maps, and aerial photographs available at the time, its 273 rectangular blocks dense with miniature city infrastructure have less than 1% margin of error. Color-coded, *The Panorama* has 3,172 underground lights, a dawn-to-dusk lighting system, and a tiny metal plane landing and taking off of LaGuardia Airport, so that the illusion of spending time in the miniature city is complete.



Fig. 5. Downtown View of The Brooklyn Bridge, The Manhattan Bridge, and The Williamsburg Bridge at *The Panorama of the City of New York*. Credit: Queens Museum, New York.

Since it is exhibited in the city that it replicates, locals and tourists excitedly find their homes, landmarks, or trace their whereabouts on *The Panorama*. Miniaturization is a key tool, in seems, in the production of authenticity. But how authentic is this perfectly accurate miniature metropolis, which is, for starters, misnamed because it is not a 360 degree vertical, painted display, surrounding its viewer? Here is where Robert Moses, the infamous instigator of *The Panorama*, comes in.

Robert Moses (See Fig. 6) prided himself, among other things, on interconnecting the five boroughs of New York City via highways, bridges, and tunnels; as well as on dedicating land for public park use and interconnecting parks via parkways. Considering that the bridges on *The Panorama* are larger in scale and built of brass, and that at the fair, where the model was first exhibited, the parks were painted a fluorescent green, we may argue that Robert Moses, who commissioned the model out of his long-time model-maker, Ray Lester of Lester Associates, cast *The Panorama* as a monument to his own achievements in New York City, purposely misnaming it to showcase its (and his own) grandeur. Indeed, he fiercely insisted on the model's accuracy and on it being a "living" representation of the city, constantly updateable.



Fig. 6. Robert Moses (Dec. 18, 1888—July 29, 1981) with model visualizing his plan for a Battery Bridge, 1939. Credit: C. M. Stieglitz, Library of Congress, New York World-Telegram and Sun Collection, <http://www.loc.gov/pictures/resource/cph.3c36079/>

But today the panstereorama of New York City abounds with contradictions: it is a gigantic miniature, called a "panorama" when it is not one; it is both accurate and ideological (due to the brass, larger-than-scale bridges); it is both aerial and pedestrian (it offers aerial views of the city, which were originally experienced as a ride, with moving rail cars along its periphery but are, since the 1990's, experienced from an elevated peripheral walkway, on foot); viewers experience both the built city of the miniature in the museum and the lived city that the miniature helps conjure up through the walk (our memories of the lived city get activated while at the model), and, finally, it seems to represent multiple historical times of the same city at once. If we are looking at the city from the early 1990's, when the model was lastly majorly updated (it was dismantled and shipped back to the original architects, who updated it with close to 60,000 changes, plus, the ascending ramp was installed in the museum gallery, to modernize the experience at the miniature), how can we understand the 21st century additions to it: CitiField Stadium, added in 2009 (See Fig. 7), and Battery Park City, added in 2012?



Fig. 7. Adding CitiField on *The Panorama of the City of New York*, 2009. Credit: Queens Museum, New York.

Furthermore, the Twin Towers remain on the model, and thus at *The Panorama* one can imagine what it may have been like to experience the Towers in the real city as well as see them as part of New York City's iconic postcard landscape (See Fig. 8). And so, on the model, the Twin Towers bring us back to the city pre-9/11. Thus, it seems that though miniaturization provides solidity of representation and certainty it, also allows for quite a bit of "play," thus suggesting that it is not a perfect tool for achieving authenticity: it is not immune to individual, communal, and institutional desires and decisions.

So, what historical time does *The Panorama* really belong to, and how can it belong to several different historical times at the same time?

To understand these concerns, we need to examine the difference between history and heritage. The Merriam-Webster dictionary defines history as the "chronological record of significant events (as those affecting a nation or institution) often including an explanation of their causes." [12] What kind of chronology tale does *The Panorama* tell, with its multiple layers of historical pasts? Kirshenblatt-Gimblett suggests that in order to understand history, it is imperative that we understand heritage. "While it looks old," she posits, "heritage is actually something new." She further explains that heritage is "a mode of cultural production in the present that has recourse to the past." [13] With that in mind, it looks like *The Panorama*, while not precisely historical due to the several historical times

intersecting at it, is certainly a case of heritage display. Kirshenblatt-Gimblett defines display as "an interface that mediates and thereby transforms what is shown into heritage." [14] In fact, what we see at *The Panorama* is the performance of heritage (as it warps miniaturization for its own purposes) in full swing.



Fig. 8. 9/11 Commemorative Installation on the Twin Towers, *The Panorama of the City of New York*, 2001. Credit: Barbara Kirshenblatt-Gimblett.

According to Kirshenblatt-Gimblett, three different clocks converge at heritage sites: the "stopped" historical clock of the moment chosen for the recreation (at *The Panorama* that would be the 1990's when the model was lastly updated); the "ticking" heritage clock of various interventions (at *The Panorama* these would be the larger brass bridges, and the recent additions of CitiField and Battery Park City); and the visitor's clock. To synchronize these clocks is very difficult, often impossible, posits Kirshenblatt-Gimblett. [15], and we see that as we try to make sense of CitiField (2009-current) and the Twin Towers (1973-2001) existing at the same time in the same city, or even the Twin Towers next to Battery Park City—the area at the tip of Manhattan built largely with landfill from the Towers' construction, and developed in the last decade of the 20th century...

To put it simply, *The Panorama* may be a confusing instance of heritage production, and such confusion may be impacting both our individual and collective experiences of the city in unpredictable ways. So, which city do we recognize in *The Panorama* as we see city landmarks existing next to each other in miniature but not in the real city? What is more, such confusion further impacts our memories of the city, again, in unpredictable ways. After visiting *The Panorama*, which city are we going to remember visiting?

The one from the early 1990's?
 The one from today?
 Both?
 None?

Gulliver's Gate

While a single exhibit in a single museum gallery, such as *The Panorama*, raises lots of complex questions, what are we to say of an exhibit of many miniatures, of many cities worldwide, spread across multiple galleries on an entire floor? Enter *Gulliver's Gate* (See Fig. 9).



Fig. 9. The Taj Mahal at *Gulliver's Gate*. Credit: *Gulliver's Gate*.

Gulliver's Gate is a mecca of 25 miniature cities from 5 continents, right in the middle of Times Square, New York, stretching over 49,000 sq. ft. total. It opened to the public in May of 2017. In a scale of 1:87 (a 6-foot tall person is here an 0.8 inch figure), a standard scale for toy miniatures and trains, *Gulliver's Gate*, as its title suggests (homage to Jonathan Swift's popular 1726 novel *Gulliver's Travels*) favors fantasy, the imagination, and play more so than historic accuracy and precision.

Tim Gilman, one of the founding creative directors of the massive, \$40 million dollar project, indeed confirms that instead of geographic accuracy, the model favors "creativity." This is clearly present in several significant differences from *The Panorama of the City of New York*: there are multiple model-makers involved in the building of *Gulliver's Gate*, not a single one (See Fig. 10-Fig. 15); making decisions about what to represent has been a collaborative effort, not an individual one; the exhibit is still a work in progress: *Gulliver's Gate* is intentionally incomplete: it is a "continuous process." [16] Indeed, as visitors wander through the galleries, they are able to see model makers currently at work, finishing the Airport exhibit, or just building other exhibits in the model-making studio, open to visitors as well (there, visitors can also plant trees, in a particular exhibit, in order to experience first-hand the work of the model maker).



Fig. 10. "New York City" at *Gulliver's Gate* (950 sq. ft.; created in Brooklyn, New York, by 16 model makers, in 358 days. Credit: *Gulliver's Gate*.



Fig. 11. "Russia" at *Gulliver's Gate* (430 sq. ft.; made in Grand Maket, St. Petersburg, by 26 model makers, in 158 days. Credit: *Gulliver's Gate*.



Fig. 12. "Brazil" at *Gulliver's Gate* (Latin American exhibit: 1,216 sq. ft.; made in Buenos Aires, Argentina, by 15 model makers, in 58 days. Credit: *Gulliver's Gate*.



Fig. 13. “Mecca” at *Gulliver’s Gate* (Middle East exhibit: 980 sq. ft.; made in Jerusalem, Israel, by 19 model makers, in 124 days. Credit: *Gulliver’s Gate*).



Fig. 14. “Forbidden City” at *Gulliver’s Gate* (Asia exhibit: 1,400 sq. ft.; made in Beijing, China, by 29 model makers, in 178 days). Credit: *Gulliver’s Gate*.



Fig. 15. “Tower of Pisa,” at *Gulliver’s Gate* (Europe Mainland exhibit: 1,291 sq. ft.; made in Rimini, Italy, by 10 model makers, in 154 days. Credit: *Gulliver’s Gate*).

Furthermore, it is an interactive exhibit: with a special key, you can activate various events on the models: the cutting of a tree, the movement of clouds, Loch Ness appearing from the lake, the Niagara Falls projection running your image on its waters (See Fig. 16), various concerts, Rio’s street carnival, etc. All such activities on the model are monitored on several big screens in an open front control room, which everyone is welcome to peek in.



Fig. 16. “Niagara Falls” interactive projection (150 sq. ft.). Credit: *Gulliver’s Gate*.

Finally, the exhibit encourages tangibility: not only through the activities that you personally turn on but also through an amazing opportunity: scanning your own body in the 3D scanner, and either taking the resulting 3D figurine home as a souvenir or placing it in a dedicated place on the model (Due to its popularity, the Brooklyn Bridge has already gotten over-populated and is already off limits, the staff working the 3D scanner share). Thus, *Gulliver’s Gate* allows visitors to not only imagine themselves populating the miniature cities, the way *The Panorama of the City of New York* encourages its visitors to do, but also to inhabit the miniature cities, as “model citizens,” via a miniature proxy—the 3D version of themselves. [17] The population growth on *Gulliver’s Gate* may soon become an issue, as more miniature people are added to the initial 100,000 figures (See Fig. 17).



Fig. 17. People on an escalator. Credit: *Gulliver’s Gate*.

To replicate oneself in miniature is not cheap (\$49, for the smallest size), and neither is visiting the environment itself. To get a taste of what the website boldly calls “a \$40-million-dollar project expected to draw well over one million annual visitors and will feature more than 300 built-to-scale models of scenes from around the universe, with hundreds of moving model trains and vehicles, ships that sail and planes that take off and land,” one needs to pay quite a bit of money to enter, which makes *Gulliver’s Gate* more akin to theme parks than museums; it is a for-profit enterprise: \$36 for adults at the door (or \$32 online), and \$28 for children (ages 3-12) and seniors (ages 65+) (or

\$24 online). It is also open from 9am till 10pm, 365 days in the year, perhaps in an effort to allow visitors to spend at least two hours at the exhibit in order to take it all in: 50 Nations, 300 scenes, 1,000 trains, 12,000 wagons, 10,000 cars and trucks, and 100,000 people, as the fact sheet impresses upon us!

Spending time at the exhibit is crucial: only then can one appreciate the extra small objects (the vases for the bars; the attention to current events (the *Raging Bull* statue on Wall Street in Manhattan confronted by *Fearless Girl*, just like in the real city); and the embrace of cultural icons (the Beatles walking down Abbey Road, a recreation of the iconic album cover from 1969, See Fig. 18) and fantasy (Santa Claus flying high above the North Pole with his reindeer). This is, as the website promises, a “miniature world experience,” an “interactive display” of “regions of the world and famous landmarks,” including “moving trains, planes, wagons and people of the past and present.”



Fig. 18. The Beatles, Abbey Road. Credit: *Gulliver's Gate*.

Who wouldn't want to visit such a fun, friendly place and even personally “unlock” some of the activities like a true explorer, via the Activation Key, which everyone gets upon entry (See Fig. 19), and which everyone gets to keep after his/her visit, as a treasured souvenir (you can bring back the key for re-activation, if you visit again).



Fig. 19. Activation Key at *Gulliver's Gate*. It also functions as everyone's souvenir from the exhibit. Credit: *Gulliver's Gate*.

A short comparison between *Gulliver's Gate* and *The Panorama of the City of New York* shows the following:

Panorama of the City of NY

Concentrated
Geographic Accuracy
Lester Associates
Moses' wishes
Education
Inanimate
Memories/Intangible
Museum Experience
Finished Product
History and Heritage
Cheap
Visitors cannot touch

Gulliver's Gate

Dispersed
Creativity, Fantasy
Many creators
Collaboration
Entertainment
Interactive
3D replica/tangible
Attraction
Continuous Process
History, Heritage, Play
Expensive
Visitors can touch

Is *Gulliver's Gate* then, more of an accurate representation of urban environments around the world even though it doesn't favor accuracy but play? Could it be that the fun we have at it mirrors in some way the fun we've had in the environments represented or promises fun in places that we haven't even dreamed of going to? “Curatorial interventions may attempt to rectify the errors of history, and make the heritage production a better place than the historical actuality it represents,” warns Kirshenblatt-Gimblett, [18] and we need to heed to this warning: at *Gulliver's Gate* everything is in the service of creativity and fun, including the naming of all galleries with non-European miniature cities as “cultures,” thus perpetuating the branding of the “other.” How do the 3D scanner “model citizens” function in this narrative? Do they frivolously become part of the “culture” where they are placed, or do they impose their own “culture” onto the miniature environment? Do they function as just miniature bodies placed randomly anywhere, to fictionally populate a model, or do they function indeed as “model,” meaning, exemplary, citizens: ones whose miniaturized bodies and intentions are so quick and easily subdued, silenced, and controlled by the miniature mechanism?

Concluding Remarks

No matter how many, how accurate, or how interactive, panstereoramas—these comprehensive models of city environments—as a legitimate heritage tool, present a cleaner, perhaps more pleasant, version of the reality that they are depicting: through the tool of miniaturization and any play with that, as we see both at *The Panorama of the City of New York*, which boldly insists on its accuracy despite its contradictions, and at *Gulliver's Gate*, which boldly insists on its creative and fun interventions with accuracy. Panstereoramas, currently experiencing a legitimate comeback, not only in museums but also in theme parks, are thus chiefly responsible for the creation and perpetuation not only of ideal images (say, the clean and connected five boroughs of New York City at *The Panorama of the City of New York*) but also of stereotypes

(say, Rio de Janeiro represented with the favelas and carnival at *Gulliver's Gate*). Let us not forget then that how we choose to represent our cities in panstereoramas (relying on accuracy or not) dictates not only an immediate experience (of awe or fun) but also—lasting memories of cities and their people. With that latter part, comes, not surprisingly, great responsibility, and so, in this day and age, panstereoramas—these solid, finite replicas—can become agents of difference, representing what is true to life more so than ever before.

Notes

1. Stephen Oettermann, *The Panorama: History of a Mass Medium* (New York: Zone Books, 1997), 90.
2. Barbara Kirshenblatt-Gimblett, *Destination Culture: Tourism, Museums and Heritage* (Berkeley: University of California Press, 1998), 195.
3. The *Allgemeine Enzyklopädie* of Ersch and Gruber, quoted in Stephen Oettermann, *The Panorama: History of a Mass Medium* (New York: Zone Books, 1997), 90.
4. Stephen Oettermann, *The Panorama: History of a Mass Medium* (New York: Zone Books, 1997), 90.
5. Canon Meyer quoted in Stephen Oettermann, *The Panorama: History of a Mass Medium* (New York: Zone Books, 1997), 147.
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8. Ibid.
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17. “Visit,” “Discover,” “Buy Tickets,” “Shop.” on exhibits, *Gulliver's Gate* website. Accessed on December 5, 2017. <https://gulliversgate.com>

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Rethinking the History of Famous Panoramas: A Russian Perspective

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Abstract

The history of 19th-century circular panoramas is mostly well known, unless it touches upon such “exotic” destinations as Russia. While the history of panoramas and related spectacles has attracted a great number of specialists worldwide, the Russian sources remain practically unexplored. The paper aims at filling this gap. The data gathered not only draws upon a relatively large collection of panorama-related spectacles in Russia, but also attributes panorama paintings to such well-known artists as P. Prévost, J. F. Tielker, W. Barton, and T. Girtin. Based on primary and secondary sources, I argue that European entrepreneurs considered the Russian market for panoramic spectacles as secondary, refreshing their venues with new panoramas in their cities of origin and bringing previously exhibited ones to Russia—revealing through a Russian lens how the content within some of the European panoramas was interpreted differently by Russians than their European creators and audience may have understood them.

Keywords

The 19th-century circular panorama, the Russian market of panoramic spectacles, international cultural transfer, P. Prévost, J. F. Tielker, W. Barton, Steiniger, T. Girtin.

The phrase “Russian perspective” in the title of my paper may be understood in two ways. Above all, as the perspective of the historians of panoramic movement in Russia who, I believe, may suggest new facts about 19th-century well-known panoramas to their international colleagues. Simultaneously, it may be interpreted as the perspective of the 19th-century Russian audience that perceived European panoramas in its own way. In other words, the reception of the same exhibits in Russia and Europe could be very different, as the Russian viewpoint on them was quite often determined by the political news or existing stereotypes.

During this time, panorama paintings were transported to Russia from Western Europe. This means that this research may be of a great value for European panorama historians, especially those who are studying the history of panoramas in countries that were the Russian market’s most important providers – namely Germany, Austria, France, and Great Britain. Russia was flooded by European panoramic spectacles including cosmoramas, dioramas,

diaphanoramas, georamas and so on; however, in this paper I concentrated my attention on circular panoramas only.

The data gathered not only draws upon a relatively large collection of panoramic exhibitions in Russia, but also attributes panorama paintings to such well-known artists as Pierre Prévost, Johann Friedrich Tielker, William Barton, and (perhaps, most notably) Thomas Girtin. I argue that European entrepreneurs considered the Russian market for panoramic spectacles as secondary, refreshing their venues with new panoramas in their cities of origin and then bringing previously exhibited ones to Russia—revealing through a Russian lens, how the content within some of the European panoramas was interpreted differently by Russians than their European creators and audience may have understood them.

For example, the first panorama presented in Russia, was a panorama of Paris, which was brought to St. Petersburg in 1804 from that very city. According to the advertisement, it was sent to Russia from a company in Paris. The painting depicted a view of the French capital with its surroundings near the river pavilion of Tuileries. Judging by the description (particularly, the viewpoint) it could be the panorama of Paris from the Pavilion de Flore painted by the famous French panoramist Pierre Prévost, with the assistance of Constant Bourgeois, Denis Fontaine, and Jean Mouchet [1]. The panorama was exhibited in Paris from 1799 until the beginning of 1803, as indicated in a letter by a German traveller visiting Paris [2]. It is possible that the panorama was sent to Russia soon after the exhibition ended.

Most of the panorama buildings in the Russian capitals of St. Petersburg and Moscow were temporary. Above all, the panoramic exhibitions were sporadically scheduled. Entrepreneurs often traveled with a number of panoramas, which were exhibited one after another—every two or three months. However, after the exhibition closed, the local audience may not see another panoramic canvas until the next foreign entrepreneur came, which could be years. Therefore, the exhibition of panoramas in 19th-century Russia was inconsistent, rather than regular or planned.

Surprisingly, it did not prevent visiting panoramists and local enthusiasts from using the current political or social situation for promoting a particular panoramic exhibition. For example, in Ekaterina Skvortcova's paper presentation at the 2016 IPC Conference in Budapest, devoted to Karl Friedrich Schinkel's "Panorama of Palermo", which had been brought to Russia by the German decorator Andreas Leonhard Roller, she argues that Roller attempted to promote the "Panorama of Palermo" as a specific reminder about the Russian monarch family's travel to Palermo, as a means to improve the Empress's health in the mid-1840s. However, in fact, the Empress's health had deteriorated after the artist's work on the painting was already completed. Therefore, Roller himself invented the entire story with the dedication of the panorama to the royal family [3].

Although this example is extremely curious, it is far from the only one of its kind. In the first decade of the 19th century, German artist Johann Friedrich Tielker, who spent much of his life in Russia, created a circular panorama of St. Petersburg and semi-circular paintings of Moscow and Riga, which became the first large-scale panoramic images of Russian cities in history. Tielker demonstrated all three panoramas to St. Petersburg and Moscow audiences between 1804 and 1807, after which they remained unclaimed for more than five years, until he organized their re-exhibition in 1813. In my opinion, the reason for this could have been due to the Fire of Moscow in 1812, which made Tielker's panorama of Moscow a unique record of the ancient Russian capital, as it looked like before it burned down. Taking into consideration that the Fire of Moscow was associated with Napoleon's entrance to the city, Tielker may have tried to re-contextualize his rather old work in order to appeal to the Russian public's anti-French sentiment. It should be noted that this strategy would also be similar to the one that would be used in promotion of Tielker's panorama of Moscow in Munich several years later [4]).

An appeal to patriotic feelings was the most common and effective way of advertising circular panoramas and related spectacles in Russia. Another example of this is the case of the Austrian panorama of Paris that was brought to Russia in the early 1820s from Vienna by a man known as Steiniger (his first name is unknown). The European part of this panorama's history is known from Stephan Oettermann's book "Panorama: the History of Mass Medium". The panorama of Paris was first exhibited in Terese Barton's rotunda (and, probably, performed or, at least, started by her husband William Barton shortly before his death) in Vienna in 1814 and re-exhibited there in 1818 [5].

Nevertheless, Oettermann did not mention the 1820 Russian exhibition of the panorama that was organized by Steiniger with the probable assistance of Tielker. As anti-

French sentiment among former war participants was strong, the local press recommended it to its audience, but mostly as a way of "seeing" Paris without actually travelling there. For instance, one magazine wrote: "it would be strange now if any Russian (as it had happened before) was proud that at least his cousin was going to Paris" [6]. With the panorama depicting Paris at the moment when the Allies entered the city in 1814, it made the exhibition more attractive to Russian patriots.

Another example of appealing to Russians' patriotism is by examining the Russians' fascination with panoramas depicting Constantinople. Within the first half of the 19th century, Russian audiences would see three panorama exhibitions of Constantinople (1824, 1828, and 1833). The second exhibition attracted the most attention and the display coincided with one of the numerous Russian-Turkish wars. As one of the Russian magazines put it, "it was, perhaps, impossible to choose a better time than now for satisfying the public's curiosity with the demonstration of the view of the Ottoman capital" [7]. The panorama was perceived as a kind of very impressive and high-quality illustration to the latest news concerning the current military conflict with the participation of Russia.

At the same time, due to the reason indicated above, some of the most impressive examples of panoramic art available to Russian spectators would remain mostly unseen. For example, the panorama of London, which, I claim, may have been painted by Thomas Girtin. Although none of my Russian sources indicate the painting's author, it is possible to suggest that it was Girtin's "Eidometropolis" (1802) exhibited in St. Petersburg in 1821, as it was taken from the same, rather unusual point as Girtin's view — namely the Blackfriars Bridge.

According to Otterman's suggestion, "Eidometropolis" was sold to Russia in 1825 [8]. Russian newspapers indicate that the sale may have happened before 1821 when it was exhibited in St. Petersburg. This exhibition may have been organized by Tielker, who at the time was based in Russia. While Tielker had already stopped working as a panorama artist by that time, he was still active in organizing exhibitions of other panoramists' works. Additionally, in November of the same year, Tielker was preparing the exhibition of the panorama of London in Königsberg, as stated within a German periodical [9].

In total, from 1804 to 1854, the Russian public saw about two dozen panoramas, including those of Constantinople, Palermo, Rome, Paris, London, Vienna, Riga, Prague, St. Petersburg, and Moscow. Although most of these panoramas are described in past writings by European scholars, their history has been mostly based on Western sources. In my paper, I attempted to demonstrate that the Russian materials (such as archival documents, periodicals, printed ephemera, and so on) may uncover

details of how events and places are interpreted differently from culture to culture by using examples of 19th-century panoramic art, the results of which can lead to greater cross-cultural understanding.

Notes

1. Bernard Comment, *The panorama* (London: Reaktion Books, 1999), 29.
2. "Briefe einer deutschen Frau aus Paris," *Zeitung für die elegante Welt* 21 (1803), 167–168. (in German).
3. Ekaterina A. Skvortcova "“Panorama of Palermo” by K. F. Schinkel in St. Petersburg: A Remembrance of Emperor Nicholas I’s Trip to Sicily” in *Aktual’nye problemy teorii i istorii iskusstva* [Actual Problems of Theory and History of Art] 6 (2016), 585–596. (in Russian).
4. "Das Panorama von Moskau," *Baierische National-Zeitung* 212 (1816), 860. (in German).
5. Stephen Oettermann, *The Panorama: History of a Mass Medium* (New York: Zone Books, 1997); Bernard Comment, *The Painted Panorama* (New York: Harry N. Abrams, Inc., 1999), 296.
6. "Uveselenija publiki v proshedshem velikom postu" [Entertainments of the Public in the Past Lent], *Otechestvennye zapiski* [Notes of the Fatherland] 1 (1820), 145–146. (in Russian).
7. "Panorama Konstantinopolia" [The Panorama of Constantinople], *Otechestvennye zapiski* [Notes of the Fatherland] 102 (1828), 173. (in Russian).
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“Unusual Attraction! Amusement for the Million!” “Historical and Mirthful” The Magnificent Diorama of the Conflagration of Moscow, with Legerdemain, Magic, and Ventriloquism

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Abstract

“Unusual Attraction! Amusement for the Million!” “Historical and Mirthful” The Magnificent Diorama of the Conflagration of Moscow, with Legerdemain, Magic, and Ventriloquism. From the late 1840s through the 1860s, a series of ventriloquists/magicians were associated with the Diorama of the *Conflagration of Moscow*, a “peerless attraction” that had traveled throughout the Northeast since the 1830s. A distinctive image used in advertising has helped to trace this exhibition.

Keywords

Diorama, *Conflagration of Moscow*, Ventriloquism, Legerdemain

The painted panorama gave the viewer the sense of “being there”: standing on a viewing platform and seeing another city, or seeing a battle. The circular panorama installed a huge, heavy painting in a purpose-built rotunda: a large city with many potential viewers was the ideal location. But there were other “optical entertainments” that could travel to smaller towns to be shown in a hall, hotel, or a schoolhouse, to give amusement to “the million”-the masses. *The Conflagration of Moscow* was one of these, advertised as a diorama, but perhaps more accurately called a “mechanical theater,” it was exhibited in many versions, in a great many locations, for many years. [1] This presentation will deal with one such “Conflagration.”

During the 19th century, theaters and whole sections of cities burned down with some regularity. In an era before photography could quickly capture an image, and before illustrated newspapers arrived, showmen could provide an audience with views-perhaps not accurate ones- of the disasters they had read about. Shipwrecks and conflagrations-fires-were very popular subjects.

In 1827, Johann Nepomuk Maelzel (1772-1839) brought his mechanical panorama of the *Conflagration of Moscow* to this country from Europe. Supposedly Maelzel had been in Vienna when the French army invaded Moscow in 1812; someone rode by him, crying, “Moscow is in Flames,” and this inspired his production, which one review described as

“a highly ingenious and beautiful specimen of art “ which “contrived to unite the arts of design, mechanism, and music, so as to produce, by a novel imitation of nature, an admirable facsimile of the real scene.” [2]

The success of Maelzel’s conflagration inspired others: Americans Minard Lewis and Truman C. Bartholomew presented a *Mechanical Panorama of the Battle of Bunker Hill*, which ended with the burning of Charlestown, Massachusetts.

And Maelzel’s exhibition seems to have inspired the *Conflagration* that provided “amusement for the million,” touring the United States and Canada for over thirty years, featuring the performance of a series of ventriloquists and magicians, with the *Conflagration* presented at the end of the evening’s entertainment.



Fig. 1 Schenectady, NY, Evening Star and Times. Used with permission: www.fultonhistory.com. Not in copyright.

This diorama also has a distinctive woodcut image associated with its' advertising: this must have been passed to each new proprietor, to be given to newspapers to insert in advertisements.

This particular *Conflagration* may have been the "great attraction" that appeared in September, 1835 at the Baltimore Museum and Gallery of Fine Arts, advertised as a "new and splendid Panoramic Spectacle of the CONFLAGRATION OF MOSCOW" that differed from Maelzel's.

The diorama shown in Boston as a summer amusement in August of 1836 was almost certainly our *Conflagration*. Mr. Jonathan Harrington (1809-1881), magician and ventriloquist, had, "at great expense", fitted up the hall for this exhibition. A ventriloquist and magician, Harrington was born in 1809, and began performing professionally at the age of 17, in Boston.

In 1837, The *Conflagration of Moscow* was again on view, after numerous requests from families, according to the proprietor.

In 1838, Mr. Harrington was in Village Hall, in Poughkeepsie, New York, where he exhibited his "ventriloqual art" and feats of magic, and concluded with the *Burning of Moscow*. A newspaper article compared Harrington's show to Hanington's Dioramas, and found this conflagration many times larger than Hanington's, taking about 45 minutes to complete.

A detailed description of the exhibition was given:

"The curtain rises amid the discordant peals of numerous alarm bells, arousing the inhabitants from their slumbers. Darkness broods over the whole scene, save the faint gleaming of the pale moon, which gives a feeble outline to the spires, the domes and battlements of the 'City of the Czars.' Suddenly a small flame, at first scarcely perceptible, appears upon the horizon, and gradually spreading, finally envelopes the whole city. The lurid glare, imparted by the devouring element, replaces the pale green light at first thrown by the moon, and clothes the Cathedral of St. Joan, the Kremlin, towers and steepled palaces, in the most gloomy splendor.

The Russian incendiaries, busy in the work of destruction, are seen running to and fro; the music of Napoleon's troops, at first faint and softened by distance, strikes upon the ear, gradually increasing in loudness as they approach. [...] The French columns are first seen in a remote part of the town, crossing the Bridge of St. Peter, and approaching the spectator, recross upon the Bridge of St. Catherine. [...]

The eager flight of the citizens with their treasures—the triumphal march of the Imperial army—the roiling smoke and ever-increasing

ocean of flame—the falling of steeples—the pealing of the alarms, and tolling of the convent and church bells—the military music—the brisk rattling [...] of the infantry—the hollow sounding of distant cannon—are so executed and combined as to convey as accurate idea of the scene, which it is impossible to describe. Finally, a mine explodes beneath the palace of the Kremlin, and this stupendous edifice, with its lofty towers and battlements, becomes a heap of smoking ruins." [3]

Certainly all this was worth the 25 cent admission!

How was all this accomplished? A story entitled *Behind the Scenes* that appeared in the 1879 issue of *The Youth's Companion* may give some clues. [4] The author had been one of five hundred spectators when the *Conflagration of Moscow* arrived yearly in his home town. Learning that the proprietor and his wife hired 13 boys to operate the exhibition, he and a friend vowed to be behind the scenes the next year. The show arrived by train, and both boys are taken on. There was no pay, only the reward of seeing the show.

The show was held in Corinthian Hall; the proprietor's wife, who chewed gum throughout, admonished her staff to remain perfectly quiet; her husband in the meantime arranged lights, and placed the machinery. The audience viewed the exhibition through an aperture about sixteen feet long and ten feet high. The diorama's great bell of Moscow, made of pasteboard, covered in gilt paper, was kept swinging by one boy. The bell made no sound, so a Chinese gong beat in time to the bell's swinging. Another boy turned a crank that made sentries turn around a ring. The author was seated on a box behind a bridge, turning a crank that made sections of figures representing the various military move. Each section was about a foot long, and was placed on an endless belt that traveled under the blue board that represented the surface of the river. As each section reached the end of the belt, the showman's wife moved them back to the beginning.

A snare drum was played for the timing of the army, and a bass drum beaten to represent distant artillery. A hand organ played continually, to represent the music of the cathedral.

The showman would periodically crank a cylinder which gave off a sharp cracking and snapping, imitating the sound of musketry firing. The towers of the domes were fixed in grooves, and when a string was pulled, sank down; spires had hinges on the back, and toppled over into the flames when nudged.

Augur holes placed a few inches apart in a long strip of wood were filled with gunpowder, and a trail of gunpowder run between these; the last hole contained a chemical that would burn with colored light. This was fired by the showman, who then ran back to the cylinder to

crank out more musketry sounds. After more crashing, hissing, and flashing, the stage was filled by purple light, and the curtain went down.

In addition to fire, smoke, crashing buildings, falling bridges, and sound effects, the larger shows had more elaborate musical accompaniment.

A writer in *The Knickerbocker* of December, 1836, recently returned to New York after an absence from the city, described hearing the music that accompanied the neighboring Hanington's Dioramas: "At eight o'clock to a minute, I can still hear the first blast of martial music of Napoleon's army as it is entering Moscow; then, as of old, follow the conflagration, the reports of the artillery, the booming of the cannon, and finally, the usual explosion, and the falling of the Kremlin." This was followed by the Great Fire in New York: "Next in order is the Great Fire in New-York. The ringing of the bells—the rattling of the engines—the sudden flashes of light—the roar of the flames—the cries and shouts of the distracted citizens—are given as the bills have it, 'with appalling effect!'" [5] Two conflagrations in one evening! And this was only part of the show.

Given the use of gunpowder, and "colored fires," which involved a burning chemical, it is perhaps not surprising that these "conflagrations" themselves regularly burned. Hanington's diorama of the *Conflagration of Moscow* had burned in Boston.

In 1841, the Court House in Exeter, NH was destroyed by fire, along with the *Conflagration of Moscow*, and all the machinery connected with it. It had been exhibited there the week before; the loss to the proprietors was given as about six thousand dollars. In 1858, the *Moving Diorama of the Battle of Bunker Hill and Conflagration of Charlestown*, having been shown in far-away California—interestingly enough, with Ventriloquism as part of the program, was offered for sale "being partially damaged some time since by fire."

In 1842, Mr. Harrington, now proprietor of Harrington's Museum in Boston, advertised that he was selling off the whole of his "rare and valuable collection;" this included the *Conflagration of Moscow*, which was to be sold with all its properties (machinery, scenery, figures, lamps, etc.) along with the boxes made and used for its transportation. The buyer would be instructed on how the show was worked. [6]

But it was Mr. Harrington himself who exhibited the *Conflagration* at the Lowell Museum in Lowell, Massachusetts in April of 1843, with Laughable and Comical experiments in Ventriloquism and Imitations were promised.

In July of 1843, the *Bangor (Maine) Daily Whig and Courier* wrote that the *Conflagration of Moscow* was to appear in that city at last; Mr. Harrington of Boston renovated the old Theatre building for the exhibition.

Earlier attempts to exhibit it had failed due to the lack of a suitable room. But Mr. Harrington of Boston had now secured the only building in the city spacious enough for the show, the old Theatre building, and was fitting it up. The renovation of the building included erecting elevated seats so that everyone in the audience had an uninterrupted view of the show. It was August 7th before the "unrivalled exhibition," as it was termed, opened.

Harrington showed the *Conflagration* in Boston again in 1845. Then it appears with other ventriloquists and magicians: it seems likely that Harrington arranged for others to take the show on the road.

In May of 1847, the *Detroit Free Press* and *Detroit Advertiser* were both cheated by the man who exhibited the diorama in that city for several nights: he left town suddenly without paying for his printing bill. Local papers copied their articles, lest the same showman cheat other papers.

The showman may have been Mr. Young, who showed the *Conflagration* together with feats of Necromancy in Military Hall in Milwaukee, Wisconsin in June of 1847.

By 1848, a Mr. Gester was showing the magnificent diorama, along with his experiments in magic and ventriloquism in Auburn, N.Y.

But a year later, Mr. Young, the wonderful necromancer, again appeared with the *Conflagration* in Lowell, Massachusetts.

Mr. Gester appears in Utica, New York's Mechanics Hall in early August, 1849, again with the diorama, ventriloquism and magic. He appears with "Little Bobby, his speaking figure," apparently a ventriloquist's dummy. Advertisements state that he will appear for three nights, August 9th, 10th, and 11th, but he stays three evenings longer. "Mr. Gester's tricks and ventriloquism are alone richly worth the price of admission, to say nothing of the Burning," wrote the *Oneida Morning Herald*. At the same time, a Mr. Wyman, billed as the "Wizard from the South," performed exhibitions of ventriloquism at the Utica Museum.

"Unusual Attraction! Amusement for the Million!" read the advertisement for Oswego, New York's Academy Hall, above the usual image of the diorama, again with Mr. Gester the showman in late August of 1849. Admission was only 12 ½ cents here; 25 cents had been charged in Utica.

Mr. W. H. Young with his unrivalled experiments in Necromancy, presented the *Conflagration* in Bleecker Hall in Albany, NY in early October of 1849. And Mr. Gester is also mentioned: the two men appeared to have alternated their names in advertising; the *Buffalo Daily Courier* mentions "the gentlemen at Concert Hall who burn up Moscow every evening".

Mr. Young reappears with the *Conflagration* in January of 1850, in Fredericksburg, Maryland's Town Hall. And

later in 1850, Mr. Gester gave a “gift exhibition” and a Professor Wyman exhibited ventriloquism, magic, and automats. A “gift exhibition” was often presented by showmen: audience members bought tickets, usually at a higher price, for a chance at winning any one of the valuable gifts advertised, including jewelry, furniture, etc. No doubt many of the “gifts” were of lesser value than claimed. By July 1850, Gester was in Zanesville, Ohio with the diorama, by August, he was in Cleveland before traveling to Detroit; he paid \$10 for a license to exhibit in Ann Arbor, Michigan, and later appeared at St Louis, Missouri’s Odd Fellows’ Hall. He appears to have traveled to New Orleans at the end of November, moving back north to Sandusky, Ohio by January 1851, and to Buffalo, New York, by March. There he appeared at Concert Hall, advertising his show as “HISTORICAL AND MIRTHFUL!” and for one week only. The *Buffalo Daily Courier* recommended the exhibition “to those who would pass an evening pleasantly. “It is decidedly one of the best things of the sort extant. The performances of Mr. Gester gives a variety to the entertainment, and the whole affair is exceedingly well got up.” Admission was 15 cents.

Mr. Gester showed the Diorama in Lyons, New York in April, but when he appeared in Albany, New York the next year, 1852, there was no mention of the diorama in his advertising.

In April of 1853, a Prof. Taylor, the great ORIENTAL MAGICIAN, advertised that he would show Maelzel’s diorama of the *Conflagration* in Lowell, Massachusetts’ Merrimack Hall. The exhibition appeared in New England several times, in cities textile manufacturing cities like Lowell, Massachusetts. Thousands of mill workers had cash money, and after working 6 ½ days a week for up to 14 hours a day, provided an eager audience for entertainment.

In June of 1853, the *Conflagration* was back in Bangor Maine, advertised as “Mealzel’s Monster Diorama” with the Great Oriental Magician again appearing. The spelling of Maelzel’s name was corrected in the next ad, although this surely was not his diorama.

The show was next seen in early August at Jackson Hall in Lowell, Massachusetts where it was so successful that it was kept on exhibition for another week at the Lowell Museum, now with a Mr. Gallagher as the ventriloquist. The *Lowell Courier* made a correction at this point: “This is not Maelzel’s Diorama-for that was destroyed 15 years ago-nor is it a [illegible] that was exhibited here for a short time since, but it is the LARGEST, OLDEST and most [illegible] Diorama, and has been exhibited and highly recommended in all the principal cities in the Union.”

By August 15th, Professor Taylor had taken the show to Halifax, Nova Scotia’s Temperance Hall, and a local newspaper described the views shown, using the same words as the 1838 Poughkeepsie, N.Y. newspaper article.

In addition to magic tricks, Prof. Taylor performed a solo on the accordion: this was so well received that it was encored.

Mr. Gallagher showed dioptric paintings (magic lantern slides?), performed laughter-inciting scenes in Ventriloquism, and showed the *Burning of Moscow* in Williamsburgh, Brooklyn, New Jersey, and New York City in early March of 1854. He went on to Jersey City, New Jersey, and returned to New York to give a Grand Gift Entertainment, at the St. Nicholas Exhibition Room at 495 Broadway in New York. All ladies leaving the hall were given an envelope containing an order for a gift, which might be a gold watch, a silk or muslin dress, a parlor chair, etc., which could be claimed the following day only. Later in March, Gallagher returned to the Brooklyn Museum to burn Moscow. He was so successful that he continued for an additional week.

In July of 1854, a Mr. Hubbard presented an additional attraction to his “justly celebrated entertainment” in Halifax’s Temperance Hall: this was the “Burning of Moscow” diorama, and a “ventriloqual entertainment” was connected with it.

The *Conflagration* toured upstate New York several times over the years: the cities visited are small ones today, but during the early 1800s they were located along the Erie Canal and the early railroads, and had large potential audiences. The Canal had made it possible to ship the area’s agricultural products more quickly and cheaply to New York City, making that city the most important port in the country.

The familiar woodcut image advertised the *Burning of Moscow* in Syracuse, New York’s Corinthian Hall in June of 1855, with Mr. Gallagher.

Mr. Gester, magician and ventriloquist, made his first appearance in Buffalo in six years in July of 1856, when he appeared with his “learned Canary Birds.” There was no mention of the diorama.

Mr. Gallagher returned to Bangor, Maine’s City Hall in November of 1856, showing the diorama, then went on to Boston, and in 1857, he exhibited in Newburgh, New York, Hartford, Connecticut, and Newport, Rhode Island.

In September of 1860, Gallagher showed the diorama, with dioptric paintings, and chromatropes, “artificial fireworks,” from a magic lantern, in Bordentown, New Jersey. He also gave demonstrations of ventriloquism, performing with “little Bobby” the automaton figure.

He was in Schenectady, New York in 1861 or 1862, - during the Civil War-where his entertainment was deemed a work of great merit.

In 1863, Gallagher was in Philadelphia before traveling to Harrisburg, Pennsylvania, where he presided over the entertainment “in his peculiar and happy style,” according to the *Daily Patriot*. This is the last time I’ve found advertising with the image of the burning of Moscow,

although Mr. Gallagher performed as a ventriloquist in Beverly, New Jersey in 1864 and showed magic lantern slides as late as 1888 without the diorama.

What happened to the diorama? A writer reminiscing in the *Boston Evening Transcript* of 1891 described Jonathan Harrington's performance as a magician and ventriloquist. He relates the last time he saw the *Conflagration* diorama: "Mr. Harrington showed it to me in the barn connected with his residence at Revere where it was stored. I was then the sole auditor. It was never exhibited again." [7] But the author does not give a date for this last showing. Perhaps the diorama had been returned to Harrington in 1863 or 1864, and put into storage in his barn at Revere, Massachusetts then. Mr. Harrington died in his home on May 4, 1881. What became of the diorama is not known.

Notes

[1] The Diorama, introduced in Paris in the early 1820s by Daguerre and Bouton, was shown in a purpose-built building. Large paintings on transparent canvas were lit first from the front, then from the back, using skylights, shutters, to transform the picture (for example, from day into night). The room in which the spectators were seated revolved, bringing another picture into view. As in the case of the panorama, the Diorama was installed in large cities. The *Conflagration of Moscow* was not a true Diorama, then, with its' addition of mechanical figures, light and sound effects, but used the name. The moving panorama, generally painted on muslin, and scrolling from one roll to another with narration by a showman and often musical accompaniment was the other "optical entertainment" that traveled to smaller cities.

[2] "Maelzel's Conflagration of Moscow," *Philadelphia Monthly Magazine*, January 15, 1828, 200, last accessed September 3, 2017, <https://books.google.com/books>

[3] Egbert B. Killey and Benson John Lossing, eds., *The Poughkeepsie Casket*, October 6, 1838, 107-108, accessed February 5, 2012, <https://books.google.com>

[4] Rossiter Johnson, "Behind the Scenes," *The Youth's Companion*, September 4, 1879, 294-295, accessed November 24, 2011, <https://books.google.com/books>

[5] Charles Fenno Hoffman et al, eds. *The Knickerbocker: Or, New-York Monthly Magazine*, December 1836, 710-711, accessed August 19, 2007, <https://books.google.com/books>

[6] "The Conflagration of Moscow, (painting)" Pre-1877 Art Exhibition Catalogue Index, Smithsonian American Art Museum, accessed January 8, 2012. <http://siriris-artexhibition.si.edu>

[7] "W.A.F.," *Boston Evening Transcript*, January 17, 1891. <https://newspaperarchive.com>

The list below of dates, locations, and showmen exhibiting the *Conflagration of Moscow* was assembled from newspaper archives on line:

- <https://libraries.psu.edu/about/collections/digital-newspapers/pennsylvania-civil-war-era-newspaper-collection>
- <https://newspaperarchive.com/>
- https://news.google.com/news/advanced_news-search
- <http://nyshistoricnewspapers.org>
- <http://www.fultonhistory.com>
- <http://www.lib.unb.ca>

1835, September Showman unknown	Baltimore, MD
1836, August Harrington	Boston, MA
1837, June Showman unknown	Baltimore, MD
1838, October Harrington	Poughkeepsie, NY
1843, April Harrington	Lowell, MA
1843, August Harrington	Bangor, ME
1845, July Harrington	Boston, MA
1847, May possibly Young	Detroit, MI
1847, June Young	Milwaukee, WI
1848, ? Gester	Auburn, NY
1849, ? Young	Lowell, MA
1849, August Gester	Utica, NY
1849, August Gester	Oswego, NY
1849, October Gester	Buffalo, NY

1850, January Young	Fredericksburg, MD	1854, March Gallagher	Jersey City, NJ
1850, ? Wyman	Trenton, NJ	1854, March Gallagher	New York, NY
1850, April possibly Gester	Lancaster, PA	1854, March Gallagher	Brooklyn, NY
1850, July Gester	Zanesville, OH	1854, April Gallagher	Newark, NJ
1850, August Gester	Cleveland, OH	1854, May Gallagher	New York, NY
1850, August possibly Gester	Detroit, MI	1854, July Hubbard	Halifax, Nova Scotia
1850, August Gester	Ann Arbor, MI	1855, April Showman unknown	Fredonia, NY
1850, September Gester	St. Louis, MO	1855, June Gallagher	Syracuse, NY
1850, November Showman unknown	New Orleans	1856, September Showman unknown	Portsmouth, NH
1851, January Gester	Sandusky, OH	1856, November Gallagher	Bangor, ME
1851, March Gester	Buffalo, NY	1856, December Gallagher	Boston, MA
1851, April Gester	Lyons, NY	1857, December Gallagher	Newburgh, NY
1853, April Taylor	Lowell, MA	1858, August Gallagher	Hartford, CT
1853, April Gallagher	Cambridge, MA	1858, September Gallagher	Newport, RI
1853, June Taylor	Bangor, ME	1860, September Gallagher	Bordentown, NJ
1853, August Gallagher	Lowell, MA	1861 or 1862, April Gallagher	Schenectady, NY
1853, August Taylor	Halifax, Nova Scotia	1863, January Gallagher	Philadelphia, PA
1853, August Taylor	Dartmouth, Nova Scotia	1863, March Gallagher	Philadelphia, PA
1854, March Gallagher	Williamsburgh, NY	1863, April	Philadelphia, PA

Gallagher

1863, June
Gallagher

Harrisburg, PA

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Killey, Egbert B., and Benson John Lossing, eds., *The Poughkeepsie Casket*, October 6, 1838. <https://books.google.com>
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"The Conflagration of Moscow, (painting)" Pre-1877 Art Exhibition Catalogue Index, Smithsonian American Art Museum. <http://siris-artexhibition.si.edu>
"W.A.F.," *Boston Evening Transcript*, January 17, 1891. <https://newspaperarchive.com>

Author Biography

Suzanne Wray lives and works in New York City. Her research on panoramas and related "optical entertainments" has been presented at conferences of the International Panorama Council and the Magic Lantern Society, at the Coney Island Museum, and the "Panoramas in Motion" symposium in Saco, Maine. Her research has been published in the Magic Lantern Gazette, and the Society for Industrial Archeology newsletter.

Hidden Treasure: Panoramas of the Alaska Territory by Topographers with the United States Geological Survey (1910-1932)

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Abstract

Hidden Treasure is a summation of an exhibit presently (2017) on display at the National Archives at College Park, Maryland, USA. The exhibit concentrates on the use of panoramic photography to aid in topographic surveying, and was practiced between 1910 and 1932 by the United States Geological Survey (USGS) in the Alaska Territory. Using the panorama in this fashion had never been successfully utilized before, and was invaluable in the creation of topographic maps of the territory. Mr. James W. Bagley of the USGS perfected the use of the panoramic camera, and detailed his technical methodology in USGS Bulletin 657 (published in 1917). Preservation duplicates of the original panoramas are in the custody of the National Archives and Records Administration (NARA) and are Public Domain.

Keywords

Panorama, Alaska, Bagley, USGS, topographic, map, exhibit, NARA, 1917, nitrate.

Introduction

Before discussing *Hidden Treasure*, I wanted to explore the 2017 IPC conference theme of “re-thinking” the panorama, and how it applies to the photographs shot by the USGS a century ago.

Much of what we think of when we hear “panorama” is an image that captures the world from the view point of ground level looking outward. In the early 20th Century, the “golden age” of panoramic photography if you will, images of our world were vividly captured in a manner that had been attempted for decades. The first patent for a panoramic camera was in fact, from 1843. Could there be a way for panoramic photography to visually interpret the world, not from ground level looking outward, but from a bird’s eye view looking downward? This would certainly be a re-thinking of the panorama, but what purpose would it serve, and how would it be done?

As the United States rapidly expanded at the turn of the 20th century, topographers with the USGS worked feverishly to produce maps of far-off territories that were both accurate and precise. Maps of course, present us with a bird’s eye

view looking downward. How could vital information be recorded so that information from a landscape could be converted into a map?

The answer came from James W. Bagley, a topographic engineer with the USGS. Mr. Bagley picked up where a small group of Canadian topographers left off a few years earlier, and in 1910 began his exploration of using the panoramic camera for topographic surveying. A camera that captured a scene at ground level looking outward would produce images containing visual data used for topographic maps, a bird’s eye view looking downward.



Fig 1. *Topographic Map of Port Valdez District, Alaska* 1917. Topography by J.W. Bagley and C.E. Giffen. Plate 1 from USGS Bulletin 657. Publications of the US Government, RG287, Box 1716, National Archives at College Park.

At the time, the place most in need of quick, accurate and precise topographic maps was the Alaska Territory, which had been purchased from Russia barely 50 years earlier. General maps of Alaska were available in 1910, and the US Coast and Geodetic Survey had published extensive surveys of Alaska’s perimeter already. But much more work needed to be performed in Alaska’s interior, where so many treasures remained hidden.

Surveying for the production of maps is as old as man’s fascination with the unknown, and obviously existed long

before the age of panoramic photography. In the early 20th century, the most common method for data gathering was to use the telescopic alidade and plane table. The alidade is precision telescopic device and the table enables a one to draw on paper what you sees through the lens. What topographers capture in these drawings are geological landmarks and features that will eventually provide the necessary data for an accurate and precise map.



Fig 2. *Rufus H. Sargent using Alidade and Plane Table (image cropped)*, 1914. P.H. Smith Collection, Image 49. USGS Photographic Library. Denver, CO.

Mr. Bagley's Breakthrough

What Mr. Bagley did in 1910 was to augment what was performed by hand and capture it onto film. The camera, combined with the plane table and alidade, would significantly decrease time spent in the field, although it would mean more time spent in an office setting back at headquarters in DC. This would be extremely important in Alaska where the land is vast and the window of opportunity for gathering data small. Mr. Bagley opted a swing-lens panoramic camera that was relatively portable, easy to operate, and used light weight flexible roll-film.

The team of USGS volunteer employees were assembled at headquarters and led by a topographic engineer. It was a great opportunity for staff to experience the adventure of a lifetime. They would travel by rail to Washington State and take a ferry north to the southern Alaska coast.

All of their supplies (including food, clothing, etc.) were brought with the team. Transportation was a combination of railroad, pack horse train and steamboat. All the panoramas were shot and processed in the field. Often times, a test shot or even a test roll would be taken and processed to ensure that the camera was working properly and that the processing chemicals were up to spec.



Fig 3. *The Panoramic Camera*, 1917. From US Geological Survey Bulletin 657, Plate III. Collection of Richard E. Schneider.

At the end of the summer season, (late August, early September) the team would make the return journey back to Washington, DC. There the photographic negatives would be printed and undergo analysis.

So what was the purpose of the panoramic photographs? How did the USGS “re-think” the panorama? Well, when the prints were dry they would be placed in a device called a “photo-alidade”. Using this and other tools, topographers would take measurements from the panoramas as if they were there in the field. In other words, the panorama provided the topographer with a simulated experience.



Fig 4. *Panoramic Photo Alidade*, 1917. From US Geological Survey Bulletin 657, Plate VIII. Collection of Richard E. Schneider.

The photo alidade was not designed to simply “view” the photograph, but to enable the topographer to perform complex measurements. The Rotary Scale and Elevation computer were also used to determine height of mountain

peaks and other formations in the panorama.

During the measurement process, the topographer would hand-write information directly onto the print. Because the negatives and the prints were just the supporting cast in the overall goal of producing maps, it did not matter to the topographer if markings detracted from the scenic beauty of the photograph.



Fig 5. View from 75 ft. South of Station 127, Port Valdez District (cropped), 1916. James W. Bagley. Records of the US Geological Survey. 57-NP-112-Bagley-Port Valdez-127-1.

The end result was a topographic map, which saw the world from a bird's eye view, looking downward. This fundamentally “re-thought” the panorama, and utilized it in a manner that had never been successful before.

The mathematics, science and methodology of using panoramic photography in topographic surveying was codified into USGS Bulletin 657, authored by James W. Bagley in 1917. The original bulletin has several fold-out pages that compare the photographed landscape with the resulting final product map.

Despite concentrating on panoramic photography, Bulletin 657 concludes with a chapter on the utilization of aerial photography to achieve the same results: only quicker, less costly and even more accurate and precise.

Bagley after the USGS

James Bagley would leave the USGS in 1917, and become an officer in the US Army, joining the allied effort in France in WWI. His expertise as a topographic engineer, plus his research into aerial photography for mapping would be invaluable in determining enemy locations and battle lines. Bagley would serve from 1917-1936, much of it at McCook Airfield in Ohio with the 29th Engineers. He would retire as a Lieutenant Colonel and become a Lecturer at Harvard University's Institute of Geographical Exploration. Despite Mr. Bagley's departure from the USGS in 1917, the topographic work in Alaska, using Bagley's proven panoramic method, would continue until 1932.



Fig 6. Portrait of Major James Warren Bagley, No date. US War Department photograph.

Hidden Treasure

In 2008, I was invited to participate to preserve, by means of conventional film duplication, original nitrate-base panoramic negatives from the USGS. This project had to be completed by a set deadline and required more staffing to keep up with expectations. Therefore, many staff members, like myself, who did not normally work in a lab environment suddenly found themselves thrust into one.

At the onset, I evaluated the negatives for viability in the duplication process. Films that had suffered extreme deterioration or damage would not be duplicated. It was during this time that I saw numerous images that were striking in their beauty. As a person who has traveled to Alaska myself and seen its natural wonders first-hand, these historic images would take on special meaning. When time permitted, I would produce scans of individual negatives that were visually appealing. After a while, it became clear that some of the negatives visually connected to each other, meaning that, for example, a mountain on the far-right side of one negative would be in the far-left side of the next negative in the bundle. Once this discovery was made, and that extended panoramas were possible using up to four negatives, the project became much more exciting.

All told, I was able to scan only about 200 of the 6,000 original negatives before the conclusion of the project. All of the duplicate negatives are on 500-foot long rolls in the Still Pictures holdings. While the preservation of these records has been achieved, easy access to them is a bit more

problematic. There are many competing projects within NARA for access, especially online, and finite staff and budgets to fulfill them. It would appear that for now, the only online examples of the Alaska panoramas are the ones originally scanned in 2008.

Once the scans had been made, the task of digitally combining some of them into longer panoramas commenced. It was also time to research what exactly these images were used for. The first task was challenging because not all of the sections for a given panoramic scene were necessarily scanned. Coupled with this task was the effort to determine where in Alaska the photographs were taken.

In some cases, I would seek out faculty at the University of Alaska at Fairbanks to help in identifying locations. Other times I would examine cartographic records from NARA, such as the maps of the Alaska Railroad, to determine myself what certain panoramas were of.

The answer to the question of why these panoramas were taken was discovered in the USGS Bulletin 657. This work by James W. Bagley was a surprise and a trove of information, much of it highly technical.

Being a researcher and exhibit curator is not a regular part of my position description at NARA. Therefore, all of the digital assembling, the research, the outreach and production of some type of display had to be conducted as time and workload permitted. What began as an effort to scan beautiful-looking pictures would take another eight years to be transformed into something that all could enjoy.

Once a satisfying collection of scanned and assembled panoramas were created, and once the purpose behind the images became known and understood, it was time to transform ideas into reality. The final product was an exhibit, "*Hidden Treasure*" that was completed and displayed in December of 2016.



Fig 7. Section of *Hidden Treasure* Exhibit, 2017. Photograph by Richard E. Schneider.

There are over 60 pieces in the exhibit, including framed panoramic photographs, information panels, reproductions of cartographic records and one of the original printing of Bulletin 657. *Hidden Treasure* concentrates itself on the

"outtakes" from the USGS journeys into the Alaskan frontier, the photographs, as mentioned earlier, that served in a testing capacity and not necessarily for data gathering. The reason for this was that pure data gathering photographs were for the most part, not very interesting visually. On the other hand, the test shots were often true gems, showing camp life, the arduous journey by pack train, topographers at work, and small towns and settlements such as Kodiak.

Hidden Treasure is at the National Archives at College Park. It is open to the public during Research Room hours, 9:00 am to 5:00 pm Monday through Friday, with exception of federal holidays. It is in a public space that requires no special access of accompaniment by NARA staff.

Technical Background and Other Information

In 2007, NARA received approximately 52,000 original nitrate-base film negatives from the USGS Photographic Library, in accordance with the records disposition schedule. Timely duplication of these potentially combustible negatives would be NARA's top priority. Regulations are strict on the storage of nitrate-base film in federal buildings, and a temporary and finite exemption had to be granted by NARA's Safety and Health Official.

The exemption gave the lab a set period to safely store, duplicate or reformat, and remove the nitrate-base film from our facility. While in the lab's possession, all the original negatives were kept in fire-proof cabinets inside of a 38°F refrigerated room. The preservation effort would use chemically processed polyester film for duplicating the visual information and tonal characteristics of the originals.

The 52,000 negatives were divided into two groups: about 46,000 were standard field camera format (4x5" to 8x10") and were taken in numerous locations in the continental United States. About 6,000 were panoramic format (about 5x12") and were all taken in the Alaska Territory.

Some of the panoramic negatives were housed in buffered paper enclosures, but most were kept in large bundles (estimated at 100 negatives) where they were physically in contact with each other for potentially long periods of time. This could have unintentionally accelerated the deterioration process in some of the originals.

The film was shot and processed in the field, often under less than ideal conditions and by many different people, resulting in a potentially high variance of processing technique, quality of chemicals and supplies, and image permanence.



Fig 8. *Metal Storage Cabinets in Refrigerated Room*, 2008, Photograph by Richard E. Schneider.

The deterioration found in the original negatives had a number of causes: water, mold, housing and storage deficiencies, improper processing and physical and chemical degradation.

If water came in direct contact with the film and if it had not been dried with due haste, over time its gelatin layer would have adhered to its enclosure or would stick to other film if no enclosure was present.



Fig 9. *Paper from Envelope Embedded in the Emulsion Layer of Film*, 2008, Photograph by Richard E. Schneider.

Deficiencies in housing and storage could include: using non-buffered enclosures, grouping negatives in direct contact with each other, an environment without temperature and humidity control, no ventilation, and lack of protection against water, moisture and pests. Chemical degradation of nitrate-base film can be triggered by one or more of the other factors, especially high temperatures and high humidity. A cold, controlled environment and archival housing can significantly reduce this risk. Film in this state should be duplicated and safely disposed of, unless there is a compelling reason to keep the original.

The Panoramic Camera

The panoramic camera utilized by USGS topographers was of the swing-lens variety, modeled after the Al-Vista by the Multiscope and Film Co. It may have been advertised as a means for hobbyists to take scenic snapshots, but the technology behind it provided the USGS with a very effective means for capturing visual data in the field, without the burden of heavy or difficult to operate equipment.

Swing-lens cameras utilize a feed and take-up spool for roll film that has been guided along an arc, as seen to the right in the patent drawing. At the front of the camera is the lens, behind which is a flat, funnel-shaped slit that exposes the film within the light-tight box. The lens “swings” from the start to finish positions once the shutter has been released and only exposes film along the arc. A manual, wind-up spring powers the motion of the lens. Fans ensure that the motion is consistent, resulting in an even exposure.

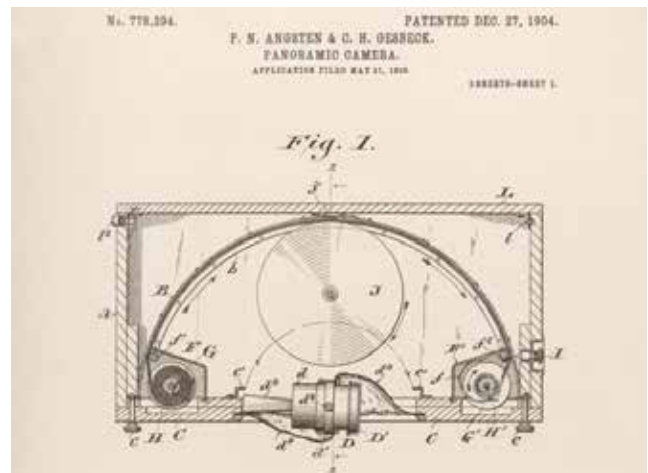


Fig 10. *Patent Drawing of Al-Vista Camera, Figure 1*, from Patent No. 778,394. 1904. P. Angsten and C. Gesbeck. Records of the US Patent and Trademark Office. National Archives at College Park.

Surveying in the Field

The alidade and plane table were utilized alongside the panoramic camera for collecting visual information in the field. The end result from operating the alidade would have been a pencil drawing by the topographer that captured geologic features integral to map-making.

In the continental United States, drawings would be the primary method for visual data gathering at this time. One can expect that any given map would incorporate data collected from numerous drawings. In Alaska, however, drawings would complement the use of the panoramic camera, and vice-versa, in order to record as much data as possible during the short summer season.

A simple alidade consists of only a beveled, straight-edge

ruler and a sighting device. At this time in Alaska, topographers used a telescopic micrometer mounted on a strong tripod equipped with the patented Johnson head. This increased the range and accuracy of the line of sight.

The plane table is a smooth, sturdy drawing board made of wood and fitted atop the tripod. A paper or frosted celluloid drawing sheet is affixed to it, observations are made, distances are scaled down, and objects manually plotted.

“Field surveys in the almost unconquerable remoteness of Alaska had to be especially well-planned, prepared, and executed. Of primary importance has been the personnel of parties. Necessary qualifications were sturdy physique and experience in packing loads on the back, and familiarity with boats and with general habits of rough camp life. Of volunteers among the Survey’s topographers and geologists, only those were chosen who had demonstrated their special fitness during several field seasons in the States. They could be expected to cope with every problem encountered and bring the information collected. The chief of party was a geologist with a topographer as assistant chief, or the other way around, and the instructions to the assistant contained the clause *“in case the chief is disabled, you are herewith authorized to take charge of the party and to carry out the plans as far as possible.”* [1]

Photography in the Field

“He travels alone and carries a pack which weighs about 30 pounds. Besides taking the usual number of photographs at his stations, he takes half a dozen or more sights at other stations and prominent peaks, on frosted celluloid with the open-sight alidade on the small board. The barometric elevation is also recorded, and when he doubts that the photographs will show the shape of the mountain occupied he sketches a few contours close about it. Lastly, he should indicate briefly those portions of the area within a radius of 10 miles which the photographs cover. The sights taken at his stations, though not essential in establishing the positions of the stations on the map, have immediate value in indicating where the topographer should look for those stations and in the selection of future stations. The sketches of the country photographed from the stations help the topographer in choosing stations for succeeding days. The degree of success which the photographer attains with his work depends on his aptitude as a mountaineer, topographic sense, hardiness, and ability to retain a correct mental picture of the country he sees. Experience in topographic surveying tends to develop all these qualities, and therefore such training, though not essential, is helpful to the photographer. Likewise, familiarity with cameras aids to a considerable degree, yet the manipulation of the panoramic camera can be readily acquired by all who have a proper appreciation of the accuracy demanded in surveying instruments.” [2]



Fig 11. *Map of Part of Port Valdez District, Alaska, Illustrating Use of Photographs*, 1917. James W. Bagley, USGS Bulletin 657, Plate XI. Publications of the US Government. RG287, Box 1716. National Archives at College Park.

After the film had been shot, processed, cut into individual frames, dried flat, and safely stored in the field, they would return with the topographer back to Washington, DC, for printing and interpretation.

Preservation Lab Work

Duplication utilized an aerial film contact printer, dating from perhaps the 1960s. It uses a grid of small Xenon bulbs for exposure. The feed roll is on the right and take-up is on the left. Under red safelight, original negatives would be placed atop and in direct contact with aerial duplicating film that had been rolled out and connected from the feed to take-up side. When ready for exposure, the “bladder” - a rubber, air-filled pillow attached to a metal bracket - would be swung down and clamped into place. Exposure would only be for a few seconds. The original would be removed, film would be advanced manually, and the next exposure could be made. Each roll of duplicating film was 500 feet long, yielding about 450 exposures on each.



Fig 12. Processed duplicating film leaving the dryer section of the Kodak Versamat, 2008, Photograph by Richard E. Schneider.

The exposed aerial duplicating film would be processed in a Kodak Versamat machine. The unit here dated from perhaps the 1980s. It was a processor ideally suited for long rolls of wide film, especially the 10-inch size used in this project. The film “fed” the machine from a darkroom. It traveled up and down through a series of racks that were immersed in film developer, rinse, and fixer. The Versamat had a built-in dryer; thus, the processed film leaving the machine was ready for use in a relatively short period.

While the original nitrate panoramic negatives were sent to and preserved at NARA, the original prints remain available for researcher access at the USGS Photography Library in Denver, Colorado. In 2012, I visited this facility and saw a large assortment of prints made decades earlier. Despite having thousands to look through, we were able to find several that would later find themselves in *Hidden Treasure*. Almost all the prints contained hand-written markings used in complex calculations. This truly gives one the sense, as well as the visual evidence, that these photographs were used for something special and important.

Conclusion

Hidden Treasure is a title that has many different facets and meanings. It speaks to the natural resources that lay beneath Alaska’s vast landscape, resources that would help fuel America’s growth and prosperity.

In a different fashion, the *treasure* refers to the stunning panoramic photographs taken by staff of the USGS that would remain *hidden* in storage for decades after their original purpose had been fulfilled.

It was the hidden surprise that many individual frames would visually connect to each other to form even larger panoramas, and through the magic of digital imaging, could be seamlessly assembled and easily reproduced.

Hidden Treasure undoubtedly describes the work of James Bagley, a relatively unknown but dedicated public

servant (both in military and civilian roles), whose work in combining photography, be it panoramic or aerial, with topography would be ground-breaking and influential for decades to come.

And last, *Hidden Treasure* are the records available for discovery at the National Archives. Researching original historical materials here can fill one with surprise and great satisfaction, especially when tangible connections can be drawn between different media, such as panoramic photographs and topographic maps. They are all part of a greater story. It was a pleasure and an honor to recognize and share these connections, and to help the public recognize this tremendous but humble resource that is sometimes hiding in plain sight, amid the busy cityscape of Washington, DC.

Notes

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Author Biography

Richard Schneider graduated from Skidmore College with a B.S. degree and received an M.F.A. from the Rochester Institute of Technology in photography in 1983. Richard spent five years on cruise ships as a photographer and sailed to southeast Alaska numerous times during the 1980's, cultivating his interest in this beautiful region. In 1992, he joined the preservation staff at NARA. Richard has devoted himself to the agency's panoramic photographic holdings and has spent much of his career raising public awareness of them. In 1998 he curated *"The Long View"*, an exhibit highlighting the variety of panoramas in the agency's holdings. In December 2016, he curated and produced *"Hidden Treasure"*, panoramas taken by topographers with the US Geological Survey.

The Panorama and Vernacular Cultural Landscapes

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Abstract

The preponderance of the great painted panoramas of the 19th-century that were presented to a paying audience portrayed historic battle scenes, great views of important cities or scenes of extraordinary natural beauty. Most contemporary panoramic photography typically does the same by showing dramatic natural scenes. This paper presents how an artist has focused on the everyday, with large scale and highly detailed panoramic photographs which are informed by research in urban design and planning, psychogeography, landscape architecture, map making and the field of geography (human & physical) with a particularly focus on the causal relationships between people and place. In geography, this is framed as ‘chorology’ or the study of ‘cultural landscapes.’ This paper provides a brief review of the research and the trajectory of an artist who makes panoramic vernacular cultural landscape photographs.

Keywords

cultural landscape, panorama, panoramic photograph, vernacular landscape, J.B. Jackson, Carl O. Sauer, landscape

Opening

This paper is derived from an artist’s talk I presented to the International Panoramic Council at their 2017 conference at the Queens Museum in New York City in October 2017.

Broadly speaking, there are two kinds of artist’s talks. One is when the artist presents the trajectory of their work. The second is when the artist wants the audience to understand certain core concepts and ideas — things that might be helpful or enriching for the audience to learn. This paper is a hybrid in that it will show the trajectory of my work that lead up to my panoramic picture making practice. And, it will share some of the academic research that provides an underpinning to this work.

Defining Terms

Beyond considering what other artists and art historians have said about the meaning and function of landscape art, there is value in considering the work of people who have written from the point of view of other disciplines, including urban design and planning, psychogeography, landscape architecture, map making and the field of geography.

The expression, ‘cultural landscape’ — not unlike the word ‘panorama’ is bantered about, and used in many

different disciplines. However, in the field of geography, it has a specific meaning. [1]

Carl O. Sauer was a prominent American professor of geography in the first half of the 20th-century. He is sometimes attributed to having coined the term, ‘cultural landscape’ but he acknowledged that it was first used by the German geographer, Otto Schlüter. Schlüter, was following in the footsteps of the founders of modern geography, Carl Ritter and Alexander von Humboldt when he first used the term *Kulturlandschaft* [cultural landscape] in 1908. [2] [3]

In Sauer’s seminal 1925 essay, *The Morphology of Landscape*, Sauer redefined the primary subject of geography as an academic field when he said that geography is “the study of areal or habitat differentiation of the earth, or chorology.” [4] Chorology is the study of the relationships between geographical phenomena and the people who live in a particular place. Sauer redefined the field of geography and gave it a subject matter shared by no other discipline. Geography became the study of ‘original’ landscape — before humanity changed it, and ‘cultural’ landscape, the result of human interactions with the land. Sauer who focused on cultural landscape said, “The cultural landscape is fashioned from a natural landscape by a cultural group. Culture is the agent, the natural area is the medium, the cultural landscape is the result.” [5]

Today, in the Anthropocene, the cultural landscape is an interactive place formed by how human decisions have affected the environment. My work stems from the belief that cultural landscape is hysteretic, an iterative interaction of cause and effect between people and place.

Let us consider the modifier ‘vernacular.’ In linguistics, vernacular is plainly spoken language — the language of ordinary people in everyday use. In architecture, it is a style exemplified by the most common techniques, materials and decorative features. Vernacular architecture is concerned with ordinary and functional buildings rather than the essentially monumental. [6][7]

J.B. Jackson, one of America’s great scholars of human geography, focused his attention on what he called “vernacular landscapes,” or the everyday built environment. Jackson, published a magazine from 1951 to 1968 called *Landscape: Magazine of Human Geography*. [8] This magazine and his writing influenced the conceptual artist Edward Ruscha, the land artist Robert Smithson, the landscape painter Rackstraw Downes, the early 1970s

photographers that formed the New Topographics movement, and my own thinking. [9]

A key takeaway of the New Topographic photographic movement was that it naturalized the vernacular landscape, raising pictures of places found at the edges of highways, industrial zones or pictures of suburban sprawl to be relevant and meaningful subject matter for artists. [10] This was a significant break from the earlier sublime photographic landscape subject matter of people like Carleton E Watkins, Ansel Adams, and Paul Caponigro.

Jackson focused on the vernacular. He thought landscape art preserved and presented in a permanent manner values at a particular moment in socio-political history and by doing so the picture creates a temporal identity for the artist, patron and the viewer. [11]

Presumably, the reader of this paper already knows something about the historic development of the panoramic form and hence this term need not be defined. However, for a painting of the late 18th-century and early 19th-century to be considered a panorama, it had to show a 360-degree vista. The form evolved over time and like some panoramic artists, starting in the mid-19th-century, I have no issues considering pictures that are less than 360 degrees to be panoramic views.

An Artist's Trajectory

Let us now trace the trajectory of how I came to make panoramic cultural landscape photographs.

Florida: *Ridgewood Motor Homes*

In the spring of 2015, I took a family trip to Florida. I don't like Florida very much. It is topographically and, with few exceptions, culturally flat. I was looking at Google maps before I went and found an amazing geometric pattern of concentric circles. It turns out this interesting shape imposed on the landscape is actually the layout for a middle-class trailer park called Ridgewood Motor Homes.



Fig 1. Google Map, 2015, Google, Screen Capture

This map, with its circular shape and extending curvilinear road, immediately made me think of the famous work, *The Spiral Jetty*, by the land artist Robert Smithson, who was deeply interested in the study of cultural landscapes.



Fig 2. Google Satellite View of Robert Smithson's *Spiral Jetty*, Google, Screen Capture

I took my camera and was startled by how people had taken these factory-made homes — these tube houses — and customized them to reflect their individual personalities. Here was a circumstance where people made their own cultural landscapes. They did not follow the design conventions found in so many gated condominium communities in Florida where every aspect of each building is determined by a co-op board.



Fig 3. Detail, *Ridgewood Motor Homes*, © 2015 David Kutz, photograph, archival pigment print

But I also know that as the sea rises, these people will have invested all of this personal creativity and work making unique homes that will likely end up underwater. The FEMA flood map makes this clear in a state that does not permit the inclusion of the term "Climate Change" in any official documents.

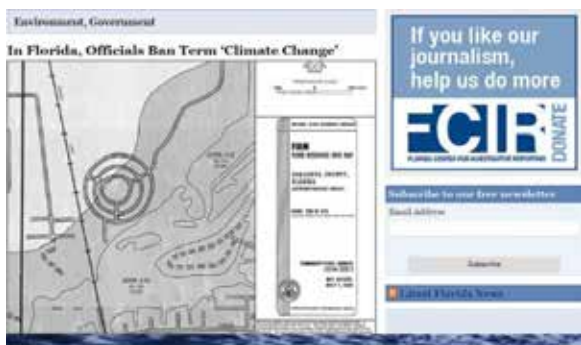


Fig 4. *Detail, Ridgewood Motor Homes*, Composite screen capture; FEMA flood map & FCIR web page, 2015

The photographs and some of the contextual reference points were assembled and presented in a grid.



Fig 5. *Ridgewood Motor Homes*, © 2015 David Kutz, photograph & screen capture, archival pigment print

It should be clear to the viewer that each of these picture is very carefully framed. A fundamental aspect of the photographic process is editing when making. What is included or excluded at the edges of the pictures must be intentional. In this work, the frame is carefully considered. The color and brightness are tightly controlled. This is a style derivative of the New Topographic photographers, but it is also characteristic of an approach to making photographic pictures going back to the earliest days of the medium.

Retro

The first photograph that did not fade in light was an abstracted cultural landscape of a courtyard by Niépce circa 1826. This abstracting of the cultural landscape was a motivation for me to exhibit in December 2016, in a gallery in New York, a series called, *RETRO*. The title clarifies to

the viewer that I understood that I was echoing a style from the past.



Fig 6. *View from the Window at Le Gras*, 1826 or 1827, Joseph Nicéphore Niépce, Original captured on 20×25 cm oil-treated bitumen, Public Domain [12]

RETRO presented 27 pictures made between October 2013 and June 2016. These landscape photographs were made in many different locations around the world, and yet they have a commonality in tone, spirit and emotional weight. Like *Ridgewood Motor Homes*, they are very tightly framed and controlled.



Fig 7. *Retro*; Thasos, Greece; 40°41'31" N 24°33'18" E © 2015 David Kutz, photograph, archival pigment print



Fig 8. *Retro*; Nukus, Uzbekistan; 42°27'54" N 59°36'46" E
© 2014 David Kutz, photograph, archival pigment print



Fig 9. *Retro*; Berlin, Germany; 52°26'59" N 13°26'59" E
© 2016 David Kutz, photograph, archival pigment print

As I was making these photographs — so derivative of a long tradition — a couple of things started to happen. One, people began to populate my pictures and two, I felt like I needed to react to the very tightly controlled compositions, and almost minimalist use of color and line. I needed to react to this kind of formal minimalism.



Fig 10. *Retro*; Brooklyn, NY USA; 40°40'32" N 73°59'4" W
© 2015 David Kutz, photograph, archival pigment print

Jersey Electric

While hunting and gather pictures in Newark, New Jersey, I noticed something odd. There were solar panels mounted on electric power poles everywhere. This launched my first panoramic project: *Jersey Electric*.



Fig 11. *A Preliminary Study, Jersey Electric*, © 2015 David Kutz, photograph, archival pigment print

These pictures pushed the deployment of 174,000 solar panels, which constitutes the world's largest distributed solar electric system back into the vernacular cultural landscape.

It seemed to be appropriate to have the solar panels appear diminutive. They became a visual corollary to their negligible effect on our consumption of fossil fuels.



Fig 12. *Jersey Electric*; Camden, NJ; 39°56'10" N 75°6'32" W © 2015 David Kutz, photograph, archival pigment print



Fig 13. *Detail, Jersey Electric; Camden, NJ*, © 2015 David Kutz, photograph, archival pigment print

These pictures also include figures. Some repeating, an effect created by taking multiple exposures. These works consider a different marking of time, changing the classic ‘captured moment’ quality of photography. This approach was also a reaction against my earlier more minimalist work. These pictures take on a more maximalist quality. Instead of “less is more,” they are saying “more is more.”



Fig 14. *Jersey Electric; Palisades Park, NJ; 40°51'23" N 73°59'31" W*, © 2015 David Kutz, photograph, archival pigment print



Fig 15. *Detail, Jersey Electric; Palisades Park, NJ*, © 2015 David Kutz, photograph, archival pigment print

Because of the wide angle of view and the process of stitching frames, it became impossible to control the precise

edges of the picture. In the field I simply could not tell exactly where the edge of the final picture would be and in the post-production process, these photographs were cropped. My work became looser, more organic and less controlled. This is a reaction against the more formalistic approach of my earlier work.

This stylistic approach to the vernacular cultural landscape I found very intriguing. I was distancing myself from several photographic conventions while looking at and showing vernacular places over a longer and more contemplative time frame.

Berlin: *Future Obsolescence*

While in Berlin last year I made a series titled *Future Obsolescence*.

As you may know, Germany is a world leader in the deployment of renewable energy systems, but Berlin is surrounded by a string of six coal-fired electric plants. This may seem ironic; however, I am confident that Germany will eventually find a way to make these plants obsolete.

Further, it was fascinating to see how these six power plants are located in the fabric of Berlin’s vernacular cultural landscape.



Fig 16. *Future Obsolescence; Heizkraftwerk Lichterfelde; 52°25'21" N 13°18'44" E*, Berlin, Germany, © 2016 David Kutz, photograph, archival pigment print



Fig 17. *Detail, Future Obsolescence; Heizkraftwerk Lichterfelde*, © 2016 David Kutz, photograph, archival pigment print

Berlin: *The Stranger’s Path*

While in Berlin, I was considering what the French anthropologist, Marc Augé called “non-places.” These are super-modern places that are typically transience spaces that do not hold enough memory to be regarded as “places.”

Augé said, “If a place can be defined as relational, historical and concerned with identity, then a space which cannot be defined as relational, or historical, or concerned with identity will be a non-place.” [13] And further, “Perhaps today’s artists and writers are doomed to seek beauty in ‘non-places’, to discover it by resisting the apparent obviousness of current events. They may do this by highlighting the enigmatic character of objects, of things disconnected from any exegesis or practical use.” [14]

Airports, hotel lobbies and the edges of highways are what Augé considered non-places and these everyday vernacular places aligned with certain ideas from J.B. Jackson. He said about the American highway, “Fleeting beauty, then, and occasional usefulness; how much more can be said of many other of our products? When high-minded groups vie with each other in bitter condemnation of the highway developments, devising legal and moral means of destroying them, those two glimpses come to mind. Would it not be better ... to see if the potentialities of these road-side slums cannot somehow be realized for the greater profit and pleasure of all”. [15]

In 1956, Jackson wrote an essay, called *The Stranger’s Path*. In it he describes the circumstances that a stranger would experience when traveling to any mid-size American city. The architecture, the urban design, and the feeling of these transit points would be the same, irrespective of which city the traveler arrived in. The kinds of business and activity that surround bus stations are similar *everywhere*. They are typically ringed by fast, cheap restaurants, bars, tourist shops and bordellos.

As the traveler moves further away from the bus station, there are more commonalities of experience. There are the financial/business sections which have little street traffic at night or on weekends and the places on ‘the other side of the tracks’ that have industrial zones and/or communities of poor people.

These ideas; Augé’s non-places and Jackson’s thoughts on the commonality of the experiences people have in certain vernacular places inspired the making of the *The Stranger’s Path*, named in honor of J.B. Jackson’s essay. It documents the walkway, also known as the “tunnel”, at Berlin’s Schönefeld Airport.



Fig 18. *The Stranger’s Path*, Schönefeld Airport; Berlin, Germany, 52°23’22.65”N; 13°30’59.01”E, © 2016 David Kutz, photograph, archival pigment print



Fig 19. *Detail, The Stranger’s Path*, © 2016 David Kutz, photograph, archival pigment print

Brooklyn: *The Palisades*

In the fall of 2016, in my home town of Brooklyn, I made *The Palisades*. This again is a kind of non-place in that it is a view of just another urban park, with people doing what people do around the world in urban parks.



Fig 20. *The Palisades*, Brooklyn, New York; 40°41’55” N 73°59’52” W, © 2016 David Kutz, photograph, archival pigment print



Fig 21. *Detail, The Palisades*, © 2016 David Kutz, photograph, archival pigment print

This picture also reminds the viewer of the original natural landscape with its layered geology. One can observe how the original cliff side or palisade has been changed into a cultural landscape due to the consequential impact of

human construction. This is an impressive representation of Sauer's chorology.

Truck || Stop

Starting in the spring of 2017, I've been working on a series of landscape photographs of truck stops and other places that engage truck drivers. At this juncture, as a series-in-progress, I cannot fully explain the underpinnings of this new body of work.



Fig 22. *Truck || Stop*, a series in progress, Mid-Atlantic Truck Show, Louisville, KY, 38°12'10.85" N 85°44'27.63" W, © 2017 David Kutz, photograph, digital file, 45556 x 10738 pixels

Closing

There are a number of aesthetic issues related to making large panoramic photographs.

Making panoramic landscapes freed me from a formalistic desire to tightly control the edge of the photographic frame. The in-the-field editing process that every photographer must consider became looser and less constricting. It allowed me to see and show a much wider view of my subjects — expanding the visual context beyond the work characterized by the New Topographical photographers and others.

With the multiple figures, these pictures also consider a different way of marking the passage of time and how we remember and identify ourselves in a place.

I do not see this work as being visually arresting or impressive. The pictures do not rely on dramatic lighting, but rather they are maximized, as opposed to minimalistic, and rely on the viewer working harder to see and understand our everyday world to consider what we have built as an everyday cultural landscape. They are both technically and conceptually layered.

My research into trying to understand the meaning and language of landscape art continues. As W J. T Mitchell, said, "Landscape [art] is a medium in the fullest sense of the word. It is a material 'means' (to borrow Aristotle's terminology) like language or paint, embedded in a tradition of cultural signification and communication, a body of symbolic forms capable of being invoked and reshaped to express meanings and values." [16]

Finally, what is the importance or value of an artist doing this kind of research? For me it is an underpinning and a rationalization not to make pictures of the great ruins in

Europe, the amazing natural beauty of the new world or to take photographs of important cultural landmarks. This permission slip to break photographic traditions allows me to focus my picture making work on the vernacular as a way of showing that by looking closely, these landscapes will speak softly, but clearly about who we are and what we value.

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Author Biography

After receiving a Bachelor of Fine Art from Rochester Institute of Technology, David Kutz moved to New York City and became the eleventh employee at the International Center of Photography. During his two years at ICP he hung exhibitions, participated in master class workshops, and taught photography.

David worked as a photojournalist from 1976 to 1980, with assignments from the New York Times, Life, Look, and Time magazines.

For the next three decades David worked in film and television as a director, producer, and media executive. He created the award-winning documentary, *The African Burial Ground: An American Discovery* (1994) and was a senior executive directing the worldwide launch of *VOOM-HD*.

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The Diorama: A 19th century Immersive Experience and a 21st Century Reconstruction/Reimagining

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Abstract

Although a few reproductions and recreations of Daguerre's Diorama exist, they barely hint at the actual experience. We know something of the Diorama's components, but this knowledge does little to communicate the overwhelming effect described by contemporary viewers. The engravings and easel paintings that have survived are in fact only representations of the Diorama, created after the fact. But by using these images, as well as patent diagrams, descriptions and other accounts to inform a virtual reality (VR) reconstruction of the Diorama, we can experiment with the visual devices necessary to recreate it in all its details, hopefully recovering the lost painting, lighting and presentation techniques that gave it such power. In addition to being more cost-effective than a physical reconstruction, a VR recreation would be in keeping with its original effect and design. The state of VR today is much like that of the Diorama in the early 1800s: like the Diorama, VR is still in its nascent stage, inviting a dynamic process of innovation and improvement. This new form of fully immersive media could refresh the concept of the Diorama, giving modern viewers a similarly convincing illusory experience, as well as simulating a first-hand historical encounter.

Keywords

Diorama, Daguerre, Bouton, Regent's Park, Media Archaeology, Immersion, Reconstruction, Virtual Reality, Mixed Reality

Introduction

In 1823, a reviewer wrote of the first London Diorama, "By means of this invention, the finest scenes in nature may be presented to us with all the truth of reality." [1] Even though a few reproductions and recreations of Daguerre's Diorama exist, they barely hint at the full Diorama experience. We know something of the various elements that made up the Diorama, but this knowledge

does little to communicate the overwhelming effect that it had on contemporary viewers.

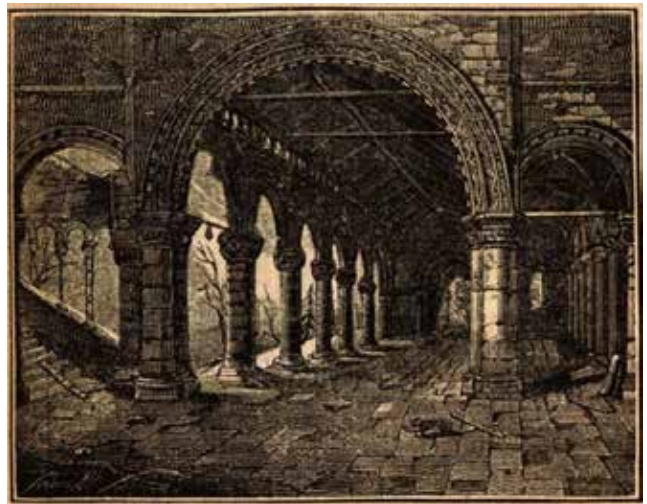


Fig 1. *The Diorama –Ruins in a Fog, 1827. 1827. The Mirror of Literature, Amusement and Instruction*, (June 30th, 1827): 260. Engraving. Courtesy of HathiTrust.

The engravings and easel paintings that have survived are in fact representations of the Diorama, created after the fact, and as such required more traditional uses of perspective and pictorial effects to translate the original experience. But by using these paintings and engravings, as well as patent diagrams, verbal descriptions and other accounts to inform a virtual reality reconstruction of the Diorama, we can experiment with the visual devices necessary to recreate the Diorama in all its details,

hopefully recovering the lost painting, lighting and presentation techniques that gave it such power.

In addition to being more cost-effective than constructing an entire Diorama building, a virtual reality (VR) reconstruction of the Diorama would be in keeping with its original effect and design. The state of virtual reality today is much like that of the Diorama in the early 1800s: like the Diorama, VR is still in its nascent stage, inviting a dynamic process of innovation and improvement. This new form of fully immersive media could refresh the concept of the Diorama, giving modern viewers a similarly convincing illusory experience, as well as simulating a first-hand historical encounter.

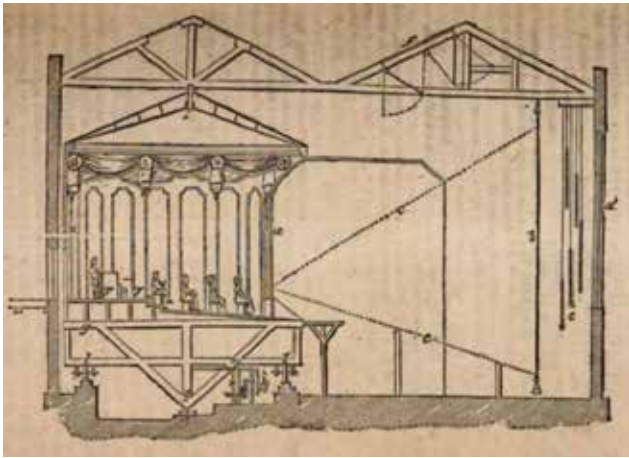


Fig 2. *The Diorama*. plate from *Mechanics Magazine*, 6, no. 159 (Saturday, September 9, 1826). Courtesy of HathiTrust.

Historical Context

In 1822, Louis-Jacques Mandé Daguerre and Charles Marie Bouton opened the first Diorama in Paris. Originally sited between the Chateau d'Eau and the Wauxhall, the Paris Diorama was quickly followed by a related enterprise in London. The London diorama was planned and built in the newly developed Regent's Park neighborhood a year later in 1823. Daguerre's brother in law, John Arrowsmith, filed the patent for the building complete with a representational elevation and floor plan and details on the mechanical device used to rotate the audience from one scene to the next. [2]

These architectural and mechanical details were first developed in Paris, where A.C. Pugin and Pierre Chatelain

collaborated with Daguerre and Bouton. Pugin's work with John Nash facilitated the planning and building of the site in Nash's Regent's Park.

A traditional diorama show consisted of two scenes, usually an interior and an exterior view. Each scene consisted of a large painting, created using translucent and opaque pigments on the front and back of the canvas. Hung in its purpose-built space, the painting would appear first in one state, and would then shift and change over time. These effects were achieved by nothing more than the manipulation of light (usually daylight), controlled by various blinds and shutters, and often altered with colored glass to create the visual changes in the painting. [3]

While props and sound effects were often used, the draw of the show was the painting, its apparent facsimile of motion in a still image, and the fully immersive experience provided by the site, both around and in the Diorama building. [4]

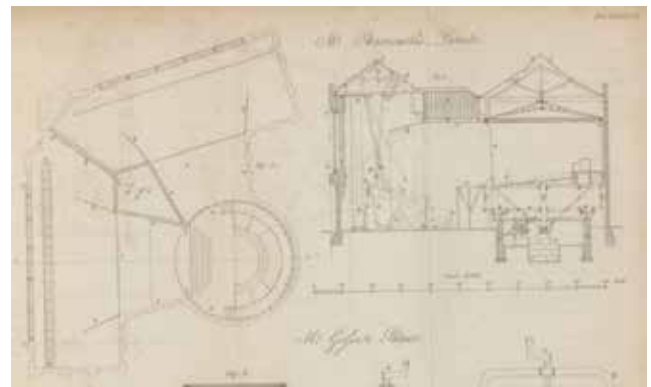


Fig 3. Detail of *Mr. Arrowsmith's Patent*, 1825, *The Repertory of Arts, Manufactures and Agriculture* (London), April 1825, 2nd series, Vol. XLVI (No. CCLXXV): Plate X. New York Public Library Digital Collections.

New Technologies

Currently, various pre-cinematic media technologies (nickelodeons, stereoscopes, panoramas, etc.) are taking on a new significance. First, they are providing the prototypes for various new mediums like virtual reality and augmented reality. Second, they point to as-yet-unexplored avenues of research, as old devices are transmuted by digital technologies. Finally, there are fascinating parallels between the pre-cinematic era and our own post-cinematic

moment, both of which provide unforeseen openings for idiosyncratic invention and artistic production.

The Diorama was one of many new media forms that emerged in the early 19th century that collectively represent a breaking down of the division between subject and object, a new understanding of perception, and a new integration of man and machine. [5] These innovations grew out of the realization that visual representation could

Fig 4. [left] *Portable stereoscopic viewer of Brewster type*, J. Fleury - Hermagis, 1870, with manual focus. National Museum of Science and Technology Leonardo da Vinci, Milan. [right] *HTC Vive*, Virtual Reality Headset, product photo, retrieved 9/12/17 from <http://www.vive.com>

be matched to the particulars of human physiology, giving rise to devices like the stereoscope, which capitalized on binocular vision, an aspect of human perception that had been remarked on but misunderstood for hundreds of years.

Virtual reality results from a similar insight into the relationship between visual media and human physiology; the realization that a visual display can be matched to much more than just binocular vision: it can also take into account peripheral vision, head rotation, proprioception, the position and motion of the body, and that this display can be coordinated with stimuli for the other senses, especially hearing. These insights lead to specific characteristics that make VR a radical departure from cinema and other screen-based media.

First, the frame is gone. Composition, understood as the arrangement of elements within a rectangular window, is no longer relevant. All the tricks of the trade: negative space, carefully placed props to guide the eye, visual balance achieved by time-honored compositional strategies like the golden rectangle - all of these have to be reconsidered, reformulated or even abandoned.

Next, you are present, all the time. You are in the exact center of the image, whether or not anything or anyone in the narrative acknowledges you. The familiar voyeuristic stance of the cinema, with its ever-shifting positions of subjectivity and objectivity, is gone. If a character looks at the camera, they are looking at you. You are embedded in the space, every bit as much as anything else in the image.

Third, everything is life-sized. Screen-based media lets us imagine that the actual size of anything that we see represented is not dependent on its actual measurement onscreen. This is one of the things that makes montage possible; we have no trouble accepting that a cut to a

closeup of an actor's face does not imply that they have suddenly become a giant. Essentially, the perceived size of an object in cinema is determined by a subtle interplay between our understanding of object scale, distance from viewpoint to object, and overall image size. In VR however, objects are in the same space as you are, and can only be understood in terms that space, setting their scale to a fixed relationship to that common space. A smaller than expected object is perceived as a scale model, and a sudden closeup would be interpreted as the object ballooning to giant size.

Fourth, virtual space is real space. That is, there is a one-to-one correspondence between every three-dimensional point that we perceive in VR with a point in real space; even if that correspondence is subjective, temporary and subject to change, at any given moment, a virtual environment is coextensive with the actual space that I inhabit as I experience it.

All of these characteristics (the disappearance of the frame, the centrality of presence, life-sized scale and real space) have common ground with 19th century media such as the panorama and diorama, which is why VR could be an ideal medium in which to experiment with and produce a reconstruction (or reimagining) of the Diorama.

Proposed Reconstruction/Reimagining

Though several attempts have been made to re-establish or re-construct a Diorama-like experience in the past two centuries, very few (if any) have managed to capture the entire experience of the 19th century Diorama. [6] As a development that came out of the theatrical stage set, the Diorama relied implicitly on its surrounding environment and the physical/imaginative conditions of the original space in which the shows were held. Therefore, the difficulty and expense of reconstructing or renovating these buildings has been one of the primary obstacles to a full reconstruction that approximates the experience.

There is also the lack of information on the paintings themselves. Most of Daguerre's original Diorama canvases went up in flames with the Paris Diorama in 1839. The rest appear to have been destroyed, likely due to the very materials used to create the images and their frequent transportation from one Diorama site to another. However, recent renovation of Daguerre's Diorama-style painting for the Cathedral in Bry-sur-Marne has shed considerable light on the artist's techniques for creating these illusory effects. [7] Though we cannot recover Daguerre's original work in its entirety, these and the few images and documents left to

us can provide a structure for reconstructing the experience of the Daguerre's Diorama.

We are proposing a location-based installation that can provide a facsimile of the entire Diorama experience through what is sometimes called 'mixed reality', that is, a combination of physical elements and virtual reality.

In the original Diorama, attendees were given program notes that also served as tickets. [8] Before they don their head-mounted display, each visitor to the VR reconstruction would be given a facsimile (paper) program/ticket. These brochures could incorporate QR codes so that they could be tracked and represented once the visitor enters virtual space.

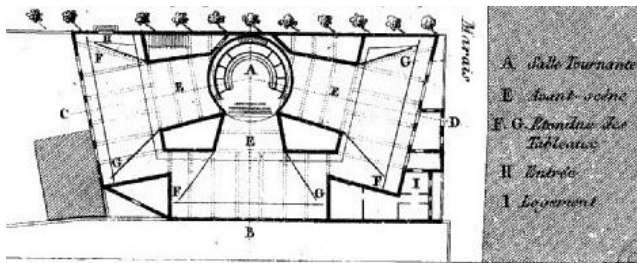


Fig 5. Detail of the Plan Général, *Diorama et Wauxhall, Paris*. 1837, Alexis Donnet et Orgiazzi et continué par J. A Kaufmann, *Architectonographie des théâtres de Paris*, (Lacroix et Baudry: Paris, 1837) Series 1, plate 23. Source gallica.bnf.fr / Bibliothèque nationale de France.

Once fully immersed in the virtual element, the visitor will experience a carefully calibrated recreation of a Diorama-like show. A key element of the Diorama was a darkened rotunda, containing seating, that was built on a mechanical rotating platform. While the Diorama show was experienced by a crowd, this darkening of the rotunda created a semi-individual experience, which is heightened in the VR simulation. The rotunda opened onto a large chamber containing the Diorama painting, which the audience would watch as it was transformed by lighting effects, implemented through a series of controllable blinds and shutters. At the end of this process, the rotunda would rotate to face a second opening, with another painting that would then go through a similar process of transformation.

To replicate this, we are proposing an installation containing several rows of seating, with head-mounted displays for each audience member. Built into the seats would be rumbling motors that could be triggered in

coordination with the VR display, creating a convincing sensation that the platform is turning. Although most VR systems incorporate headphones to provide an immersive (and private) audio component that is carefully calibrated to match the visual display, in our case this would be unnecessary, and even counterproductive, since our goal is to recreate what was originally a somewhat shared experience. Therefore, we would instead use a multichannel speaker system that would provide appropriately spatialized sound, while still allowing visitors to hear (and even speak to) one another.

Following the viewing of the two Diorama paintings, we are proposing a more interactive "behind the scenes" phase of the experience, in which visitors would be allowed to see (and possibly manipulate) the mechanical systems that generate the complex lighting effects that they have just witnessed. This third viewing space is derived from the Paris Diorama, as shown in figure 5, which shows two spaces for viewing finished canvases, and a third which was usually reserved for the artists to create their works with the necessary lighting apparatus. By adding this interactive element, the VR experience would go beyond mere historical re-creation, taking advantage of the possibilities opened to us by contemporary interactive and immersive technologies.



Fig. 6. Perry Hoberman's son using the HTC Vive system with headset and controllers. Photograph by Perry Hoberman.

Of course, beyond VR's capacity for spontaneous navigation through simulated space, VR can facilitate

interactivity to a degree unimaginable in the era of the Diorama. Currently, most of the techniques for sophisticated interaction in VR require additional hardware, such as handheld controllers. While we feel that this kind of individual interaction would be inappropriate for the Diorama viewing experience, it would certainly make sense to build a greater level of interactivity into the behind-the-scenes experience. Allowing direct manipulation of the Diorama apparatus would be likely to significantly increase visitors' understanding of the Diorama's effects. This understanding could be further amplified by providing additional perspectives on the Diorama itself, such as incorporating an interactive scale model of the entire Diorama building, making clear the relationship between the various rooms and chambers, for instance.

In addition to this recreation we would consider building a more limited, "pure VR" version of the experience, which could be built for one or more mobile VR platform, such as Google's Daydream or Samsung's Gear VR, and could be freely downloaded, or alternatively offered as a perk for a crowdfunding campaign.

Notes

1. "The Mirror of Fashion. Diorama." *The Morning Chronicle*. London. Friday, Nov. 7, 1823. Issue 17021.
2. John Arrowsmith, "Specification of the patent granted to John Arrowsmith ... for an improved mode of publicly exhibiting pictures or painted scenery ... which he denominates diorama," *Repertory of Arts, Manufactures, and Agriculture*. v. 46, 2d ser. (April, 1825): 257-265. University of Texas at Austin, Harry Ransom Center.
3. Louis-Jacques Mandé Daguerre, *An Historical and Descriptive Account of the Daguerreotype and the Diorama*. Facsimile of London: Nutt, Bookseller, Fleet Street, 1839. (New York: Kraus, 1969)
4. "The Diorama," *The Times*, (London: June 5, 1827, issue 13297): 2. "it is hardly possible to convince one's self that the deep interval across which they pass is painted upon a flat!"
5. Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge: October Books, 1990)
6. Examples include Diorama-style paintings at the Queen's Bazaar during the same period, 'Diorama' paintings and Exhibitions from International/Worlds' Fairs, and more recently theatrical installations based around

reconstructions of a late-nineteenth century follower of Daguerre at the Musée des Arts Forains in Paris, as well as an intriguing installation at the Laing Art Gallery in Newcastle, which features a John Martin painting exhibited with theatrical lighting effects.

7. Renovations carried out in cooperation with the city of Bry-sur-Marne and the Musée Adrien Mentienne

8. For example, *Diorama, Regent's Park: description of the two pictures now exhibiting, viz. the Basilica of St. Paul, near Rome, and the village of Alagna, in Piedmont, painted by le chevalier Bouton*. London: Romney, c. 1837. University of Texas at Austin, Harry Ransom Center.

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Author Biography

Perry Hoberman is a media artist, educator, inventor and musician. He works with a wide variety of new and old technologies, ranging from the utterly obsolete to the state-of-the-art. His work has exhibited internationally, with shows throughout the USA and Europe, and he has been the recipient of Guggenheim and Rockefeller Fellowships. He has taught and lectured widely, with appointments at Cooper Union, the San Francisco Art Institute, the California Institute of the Arts, and the School of Visual Arts, and is currently an Associate Research Professor in the Media Arts + Practice Division of the School of Cinematic Arts at the University of Southern California. Hoberman was an early advocate of mobile (phone-based) VR, and was instrumental in the development of FOV2GO, a zero-cost VR platform that inspired later efforts such as Google Cardboard.

Kasie Alt received her Ph.D in Art History from the University of Texas at Austin. She is currently a faculty member in the Art and Design department at Brenau University in Georgia. Her research focuses on eighteenth and nineteenth century European art and visual culture, with an emphasis on landscape design and representation, and the role of theatricality and illusion in visual culture. Her recent work examines the role of the landscape experience in the creation and reception of the Diorama in the early nineteenth century.

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 representing 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.

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Cinematic Suture and Panoramic Stitch: Subject Formation in Immersive Virtual Reality

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Abstract

This paper discusses subject formation in today's panorama-like digital moving images by contrasting the idea of suture in film theory with stitching process necessary in digital 360-degree photographic image production. Derived from Lacanian psychoanalysis, suture refers to the complicated mechanism of signification in classical narrative cinema: by integrating multiple points of view of movie camera, audience, and character in film into a syntagmatic entity, films successfully hide the "Absent One," an inevitably assumed absence of ownership of shots, and place spectators on a particular subject position in the diegetic world. Compared to the complicated suturing mechanism in the temporal medium, today's VR movies seem to choose a simpler solution for audience's immersion and their omnipotent all-encompassing view: the camera position always corresponds with the viewer's as viewing platforms were placed in the center in panorama buildings in the nineteenth century. However, the immersive images require a process called "stitching" in order to assure the audience's all-seeing power. Each image captured by multiple cameras needs digitally fixed to make the overlaps between them seamless. Based on the contrast of cinematic suture and panoramic stitch, this paper discusses contemporary panoramic immersive media as case studies of subject formation.

Keywords

subject formation; virtual reality; 360-degree image; immersive experience; film theory; suture; apparatus theory; panorama; stitching; art

Introduction

By the end of 2016, technology companies all over the world released a variety of digital devices providing consumers with an immersive visual experience from high-end head mount gears such as HTC Vive, Oculus Rift, and PlayStation VR to cheap cardboard boxes, in which

smartphones are slide, like Google Cardboard. [1] Thus, 2016 is thought to be the year of virtual reality among evangelists, engineers, and tech geeks, and they think the market is getting bigger in the following years. [2] Although all of these devices are designed to provide an immersive experience, that does not mean that they can show an omnidirectional image. Instead, they show a rectangular excerpt of the entire scene on the small screen according to the user's head movements. Regardless of the technological limitation, the experience provided by such goggles-shaped devices are realistic enough to remind us of that in panorama paintings, which flourished in the nineteenth century. Are these devices released in 2016 personalized versions of the panorama? Do they follow the same aesthetic ideology, or are there any rupture between the nineteenth and twenty first centuries? The goal of this paper is to historicize such contemporary examples of visual immersion in light of panorama and to reveal the issue of subject formation common in the both media.

Two Categories of Immersive Images

There are many words people use to refer to such immersive visual experiences: virtual reality, 360-degree video, cinematic VR, and so on. Although these words are used somehow interchangeably, in light of panorama paintings in the nineteenth century and film theory, this paper sets two categories of "photographic" and "computer-generated" immersive images according to the source of the original materials. Both types enable spectators to experience all-surrounding images around them, and, in that sense, are similar to panorama paintings. However, while photographic images are made of multiple photographs, computer-generated images are processed from a three-dimensional model of space-time made on computers. In other words, photographic immersive images have an indexical tie with the material world, while computer-generated ones do not. It is too native to assume that photography is a fingerprint of the reality today because

digital cinema making uses live-action footage as a raw material for further manipulation. [3] The two categories are, thus, set for the purpose of introducing theoretical argument later.

Photographic Immersive Image

Today's digital 360-degree camera consists of multiple sets of lenses and image sensors. (Fig. 1) These lenses and sensors are arranged on a special rig to capture the surrounding environment. Spectators of photographic immersive images wear head gear with a gyroscope that detects head movements. Depending on the spectators' head movement, the screen installed in the head gear shows the recorded image so that they can feel as if they are in the image. The basic mechanism of the photographic image shows that it can be placed in the tradition of the panorama in the nineteenth century. Visitors to panorama buildings are led to a platform installed in the middle of the cylindrical image in the building. They are at liberty to walk around on the platform to pick up a part of the huge image.



Fig 1. Jaunt's 360-degree Photographic Image Camera, 2016, Jaunt.

However, the space-time captured by the 360-degree camera is different from the natural world. The optical mechanism of the camera cannot fully prevent distortion in the images. Usually, camera engineers combine multiple lenses to decrease the distortion: the distortion is minimized in the middle of the rectangular frame, while the distortion on the edges is less corrected. In the photographic immersive image, which is made up of multiple camera images, huge distortion appears between two single camera images. The distortion is digitally retouched so that viewers can smoothly immerse into the world. This process is called "stitching." By stitching images of multiple cameras, the photographic immersive image becomes seamless and "natural" for the viewers. The same optical problem happens to panorama paintings because many panorama artists used the camera obscura or similar inventions to create a geometrically accurate pictures. [4] Panorama

artists did not need technological measure to solve the problem because the image was still. They simply used their artistic techniques to cover the gap between the camera obscura images.

Even though the distortion between camera images is hidden by the digital technology or the artists' hand skills, the sense of distortion cannot fully be removed. The images we see in photographic immersive devices and panorama buildings are two-dimensional projections of three-dimensional space-time. When you walk around in the material world, objects in your sight move differently depending on the distance between you and the objects: near objects move a great deal, while distant objects move less. This does not happen in these devices because both shows a two-dimensional image of the three-dimensional world from a single fixed point of view.

Computer-generated Immersive Images

This is the reason that digital VR contents constitutes the majority of today's consumer products. By using digital technology, a virtual three-dimensional space-time can be processed into accurate two-dimensional projections from desired points of view. This feature is distinctive in HTC Vive than other devices. HTC Vive users need to set up a space up to 15' by 15', in which they can walk around, to play the VR contents for the platform. (Fig. 2) While panorama and other VR devices tend to focus on reproducing vision, HTC VR creates a virtual space-time: the vision of the user is just a particular aspect of the entire experience. Every second, the computer connected to the head set processes a new two-dimensional image according to the position and viewing angle of the viewer. Therefore, the computer-generated VR image does not need stitching. In today's technological conditions, for acquiring a sense of immersion, it is easier to process two-dimensional images from a computer-generated three-dimensional model and to add texture on them than to modify multiple photographic live-action images.



Fig 2. Dospara VR Paradise, 2016, Dospara.

Computer-generated immersive images, which no longer require stitching, are actually not drastically different to panorama paintings and 360-degree photographic immersive images. All of these devices mirror the general tendency of human being to represent three-dimensional space-time without mediation. Since the invention of perspective in the Renaissance, Western civilization has gone to great artistic and technological lengths to produce accurate images of the material world. For conservative historians, according to Jonathan Crary, this effort led to the invention of still and movie camera in the nineteenth century (although Crary emphasizes the discontinuity between the Renaissance perspective and the modern mode of seeing). [5] If camera is regarded as a technological advancement toward verisimilitude of representation, panorama paintings, which frequently used the camera obscura and followed the rule of perspective, can also be placed in the tradition. Stereopticon Cyclorama (Fig. 3), a panoramic projection system using multiple projectors ceiled in the middle of cylindrical screens invented by John Winter and Charles Chase in the 1890s, embodies human yearning for representation of the world with accurate perspective and photographic detail in a very primitive form. Although computer-generated immersive images do not have a material tie to the real world because the origin of the images exist only in the programming code, they are the most advanced form of the tradition. Thanks to the technological advancement, the outputted two-dimensional images have more accurate perspective than any other stitched photographic images.

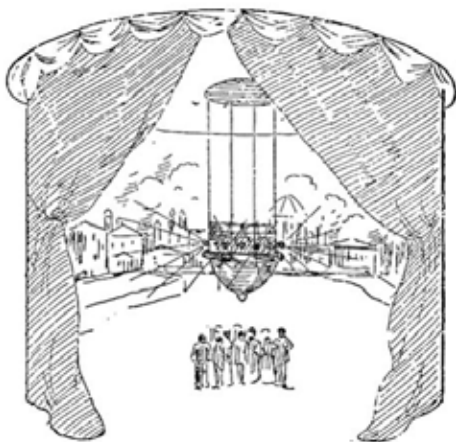


Fig 3. Image of Stereopticon Cyclorama, 1890s, Charles A. Chase and John Winter, *Lucerna Magic Lantern Web Resource*, www.slides.uni.trier.de/hardware/index.php?id=2000128. Accessed 15 September 2017.

Suture and Cinematic Subject Formation

By connection the history of panoramic immersion to the tradition of the Western perspective, subject formation becomes a matter in both photographic and computer-generated immersive images. In the field of film studies in the twentieth century, “what audiences were made to desire through the images” was one of the most central issues. Lacanian psychoanalysis allowed for the detailed study of the interaction between the spectators and the images and later yielded results in the form of apparatus theory and feminist criticism. Then, how can a moment of subject formation be found in panoramic immersive media? In order to examine the subject formation process in the panoramic immersive media, this paper overviews the idea of suture, one of the most basic concepts among these theories of how the spectator is formed into a desirable subject through watching movies.

The idea of suture is originally developed by Jacques-Alain Miller, a Lacanian psychoanalyst. He discussed the mechanisms that a subject is constructed through the signifier supplementing the fundamental lack in the discourse and is woven into the “symbolic” order. [6] Jean-Pierre Oudart applied the idea of suture to examine the spectatorship of film art. According to Oudart and Daniel Dayan, who introduced the idea of suture to English film studies, the most minimal form of suture happens in shot/reverse shot. When a single shot is given to a film spectator, the shot necessarily makes the spectator think about the authorship of the shot. In other words, the spectator questions “to whom does this view belong?” and needs to assume an “Absent One,” a conceptual presence (in absence) who possesses and controls the image given to the spectator. At this point, the spectator cannot simply enjoy the image because he/she does not forget the process of representation. When the second reverse shot is given after the first shot, the spectator’s question is answered. By showing the supposedly empty space from which the first shot was taken, the second shot erases the “Absent One” from the spectator’s mind. This second shot sutures the spectator’s ruptured view and settles his/her uneasiness in the film narrative. Through the numerous suture processes in a film, the spectator is woven into the film text and is established as a subject which fits the circuit of desire and pleasure in the film. [7]

While suture theory refers to the syntactic chronological order of temporal images in cinema, stitching in photographic immersive images is about the non-temporal gap between images. We thus cannot simply equate cinematic suture and panoramic stitching. However, their common ground is that they focus on how spectators can smoothly immerse themselves into an artificial world and are molded into a subject. Close examination of suture theory reveals the continuities from panorama in the nineteenth century to the two categories immersive images in the twenty-first century.

First of all, suture theory assumes the monocular mode of viewing rooted in the perspective in the Renaissance period. For example, Daniel Dayan distinguishes “[t]he Romantic landscape of the nineteenth century” which imposes “a monocular perspective, transforming the landscape into that which is seen by a given subject” and “the Japanese landscape with its multiple perspective.” [8] His distinction is significant because the multiple-subject mode of viewing in the Japanese landscape relativizes each perspective and, thus, undermines the importance of spectator’s question of “Who has the specific perspective?” That’s why visual representations that are not in the monocular perspective, such as Jackson Pollock’s Abstract Expressionist paintings and non-narrative animation movies, both of which draw spectators’ attention to the lines, forms, and colors, do not operate the process of suture per se. While Crary’s emphasis is more on the discontinuity from the Renaissance mode of seeing embodied in camera in the nineteenth century, Dayan associates the monocular perspective in the Romantic landscape with his cinematic suture theory and, by doing so, places cinema in the Western tradition of the single perspective.

The first position, assumption of monocular perspective, necessarily leads to the second assumption of suture theory: the material extension of space-time. Suture theory, at its superficial level, sounds very temporal because the succession of shot and reverse-shot is the driving force suturing the halls in the “imaginary” and concealing the “Absent-one.” However, the theory in fact asks for a material existence of space. As argued above, suture theory assumes a monocular perspective and, thus, requires a specific point in space, from which the scene is seen. The specific viewing points theoretically need to be out of the scenes seen from the point and, thus requires the assumption that the material world exists out of the image. The fact that Dayan utilize Foucault’s discussion of Diego Velazquez’s *Las Meninas* endorses the spatial basis of suture theory. [9]

Subject Formation in Panoramic Immersive Media

These two assumptions of suture theory apply to panoramas in the nineteenth and immersive media in the twenty-first centuries regardless of whether they are temporal media or not because spectators of these devices are embedded into the singular viewing point, separated from the images, from which all the images in these devices are structured. Stitches between neighboring camera images hide not only the distortion between the images but also the fundamental contingency and instability of the privileged single view point: thus, panoramic stitch is a spatialized expression of cinematic suture theory. Therefore, considering Lacanian psychoanalytic basis of suture theory, both panoramic stitch and cinematic suture function to prevent the “imaginary”

from entering the “symbolic” order of the perspective while utilizing the “imaginary” to establish a subject.

Zero Latency VR System

Zero Latency VR, an amusement-park attraction platform, exemplifies the characteristics that cinematic suture and panoramic stitch collaboratively exclude the “imaginary” and enforce the “symbolic” order. Zero Latency VR allows multiple users to walk around in a designated open space of around 400 m². Each user wears a head-mount goggle, a backpack with a computer, and other devices depending on the nature of attraction, all of which have motion captures to detect the users’ movement. (Fig 4) The users see avatars of them in a shared computer-generated three-dimensional space-time. In case of *Zombie Survival*, a horror shooting game in which up to six users can collaborate, a multitude of zombies appears from all the corners in the VR world and attacks the control tower placed in the middle of the space. The users shoot the zombies with the guns to defend the tower. (Fig 5) *Zombie Survival* depicts an imaginary existence of zombies. However, that does not mean that the game allows users to get exposed to the “imaginary” realm in the Lacanian sense. As the “imaginary” is utilized in forging a subject in the “symbolic” order, the imaginary figures of zombies supplements the fundamental lack in the system, in this case, the control tower, to which zombies invade: although the zombies run much faster and jump much higher than human beings do, the imaginary possibility of the zombies contributes to perpetuate the “symbolic” order of the fictional world. As the name of the game platform declares, Zero Latency VR creates a sense of subjectivity in an illusory reality of zero latency.



Fig 4. Participants of Zero Latency VR system, Zero Latency.



Fig 5. A User's View in *Zombie Survival*, Zero Latency.

The tendency can be found in other panoramas and VR contents. Stitches made between two camera obscura images in panorama arts conceal the lack of the camera obscura in the center and, instead, establish a subject there. When spectators visit a panorama building, they are not encouraged to question the material reality expressed in the art. They are trained to accept the illusory reality because suture is a mechanism establishing a subject suitable to a specific “symbolic” order. Thus, historically speaking, political ideologies have utilized panorama buildings to express themselves. Let us examine some examples of how the issue is common in both panorama and today's photographic/computer-generated VR images.

Panorama 1453

The *Panorama 1453* placed in the same-named historical museum in Istanbul is a distinctive example of how the visual device functions to construct a specific ideological subject through its representation. [10] The visitor will witness the Fall of Constantinople, in particular the moment the Ottoman troops broke the defense wall of the Byzantine empire. The platform, from which the spectators observe the scene, is placed in the middle of the Ottoman troops. So the spectators can see in detail the effort of the Turkish soldiers to shoot cannon balls against the wall, the suffering of the soldiers, and the bravery of Sultan Mehmet 2, while the Byzantine soldiers bombarded by Ottoman cannons are depicted far away. Thus, the spectators necessarily identify themselves with the Ottoman Turkey rather than the Byzantine Empire. Considering that Turkey had been discussing its joining to EU with the EU since 2005, the view point shown in the panorama can be an action to reconfirm the ethnic identity of the country.

Remembering Pearl Harbor

Such an expression of political stand point can be seen in some photographic and computer-generated immersive images. For example, *Remembering Pearl Harbor* provides a typical American narrative on the attack on Pearl Harbor on December 7 in 1941. [11] The viewers of this VR content for HTC Vive platform are introduced into the experience by Lt. James Downing, who is a living American veteran survivor of the Pearl Harbor attack. According to the binary categories of photographic and computer-generated images shown above, this content basically belongs to the later. The space-time, in which users jump in *Remembering Pearl Harbor*, is not made of photographic records but computer-generated graphics. However, what is distinctive about the content is that it also utilizes photographic records from the National WWII Museum and the Library of Congress, which provided primary-source references. The users can interact with such genuine historical materials along with realistic computer-

generated images of bombarded battleships and Japanese aircrafts. (Fig. 6) As with *Panorama 1453*, the spectator sees the entire event only through one side of the parties. However, in the case of *Remembering Pearl Harbor*, the experience comes with more accurate perspective of the space-time and hands-on activity on the photo-realistic historical materials.



Fig 6. The demo reel of *Remembering Pearl Harbor*, 2016, Time Life, video.

Criticizing the political orientation in *Panorama 1453* or *Remembering Pearl Harbor* is not the goal of this paper. Instead, this paper would like to emphasize that both contents cannot be free of a specific ideological standpoint because of their optical monocular nature starting from the Renaissance. Both contents provide viewers with a pedagogical experience that cannot be obtained from small pictures. However, the issue is that they do that only through suturing/stitching the spectators into a specific subjectivity.

The history of art cinema shows aesthetic resistance to the problem. Avant-guard filmmakers had been considering the medium specificity of film and suggested some subversive works against the monocular nature of film. While suture conceals the disrupt between shots, montage theory starting from Eisenstein emphasized the artificial nature of film editing and tried to make the audience aware that film text is a human construct. For example, Alan Rene's *Hiroshima Mon Amour* (1959) is a good example which highlights the problem of *Remembering Pearl Harbor*. The film depicts everyday life in Hiroshima, Japan, after WW2, through a couple of a Japanese man and a French woman. The main topic of the film is, of course, the experience of the explosion of an atomic bomb above the city in 1945 and the people's suffering after WW2. Along with documentary footage of the city, the conversation of the traumatized couple leads the viewers to think about (im)possibility of seeing. The film maker does not try to make the audience feel the same pain of the victims of the atomic bomb explosion nor the French woman who was blamed for her relationship with a German officer during the WW2. Rather, the director emphasizes that we cannot fully see/experience others' pain. While the French women insists that she saw what happened in Hiroshima through

the museum exhibition, the Japanese denies her and says “You saw nothing in Hiroshima. Nothing.” While historical materials in *Remembering Pearl Harbor* are utilized to strengthen the impression of a real representation, historical objects in *Hiroshima Mon Amour* rather alienates audience to question the status of reality.

Concluding Remark: Future of VR

Many immersive media in the past and present lack such a modernist/Avant-guard artistic quality, in which the authenticity of representation is self-reflectively challenged. However, that does not mean that future of VR is limited to the monocular mode of viewing. Actually, the Zero Latency VR system has the potential to explore an alternative mode of subject formation technology-wise. As mentioned above, up to six users can spontaneously be in the same visual world in the platform with a particular perspective for each user — a first in the human history. When spectators experience paintings, stage performances, cinema, or whatever, their perspectives are merged into a single privileged point of view. Although *Zombie Survival* enforces the “symbolic” order that the controlling tower protected from zombies is placed in the center, the Zero Latency VR system per se could subvert the spectator-representation paradigm by introducing the third party -- others who are neither the spectator nor visual representation. This potential resonates with the director’s artistic attempts in the form of conversation of a couple in *Hiroshima Mon Amour* in the technological limitation of cinema medium.

Thanks to technological advancement and spread of immersive VR devices in the consumer market, many contents were supplied in 2016, and the number is thought to be increasing. In light of past flourishing of panorama, the rise of VR market can be thought as another (re-)emergence of the deep-rooted monocular perspective. Especially in the time of post-truth and fake news that trap audience into a solipsistic cage, the future of immersive VR devices as entertainment, pedagogy, and art needs further exploration.

Notes

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The Contribution of Virtual Reality Technology to the Future of Museum Experiences

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Abstract

This article provides a brief overview of Virtual Reality (VR) and how museums and related institutions may benefit from integrating this technology into their programming. Using the Velaslavasay Panorama in Los Angeles, California as a case study, the reader will learn how VR technology can expand the notion of the painted panorama, be used as a strategic tool for the preservation and interpretation of the panorama, and understand potential future benefits of employing these and similar technologies into a museum's programming.

Keywords

Virtual Reality, Artificial Intelligence, Future of Education, Experience Learning, Personalized Learning, Immersive Education, Internet of Things.

Introduction

As human beings, we've been trying to be part of different realities throughout our history. Thanks to the recent digital revolution that enabled the creation of microchips and improved computer technology, especially video games, it has evolved to a point that allows us to take control of those realities—being no more just a spectator, but a protagonist of a totally new world.



Fig 01. *A Neanderthal man and his possible evolution*

The latest achievement in digital technology is virtual and augmented reality. While augmented reality, also called AR, emulates a virtual world in a real environment,

for example the game Pokémon GO. This game shows digital characters in a real world scenario via a smartphone screen. In VR the user is put entirely in a virtual world.

Nevertheless, VR technology is not a new concept, panorama paintings can be considered the roots to this kind of immersive experience, as well as cineramas and stereoscopic photos from the nineteenth- and twentieth-century. The closest concept of a head mounted display to what we have today was introduced by writer Stanley G. Weinbaum in his 1935 book "Pygmalion's Spectacles". In this book, a special pair of goggles allowed the user to experience different realities with all his senses.



Fig 02. *Edward Link showing the Link Trainer, first form of flight simulator used for military training, 2017, Virtual Reality Society, <https://www.vrs.org.uk/virtual-reality/history.html>.*

From the 1950's to 1980's, different experiments were made as digital technology developed, from movies to aviation simulators, leading the path to the 1990's, where VR technology met videogames. Many companies developed and created different headsets (e.g. The Virtuality Group, SEGA and Nintendo).



Fig 03. One the Virtuality Group VR Arcade machines, 2017, from Tesla Suit, <https://teslasuit.io/blog/history-of-virtual-reality-ultimate-guide>

Due to the limited power of microchips at that time, and even some ergonomic issues, the overall experience was very limited and caused a great discomfort, like motion sickness and headaches. The technology was put to a rest by the arcade companies and developers, who no longer had interest in investing money and time in it without a guaranteed financial return and public approval.

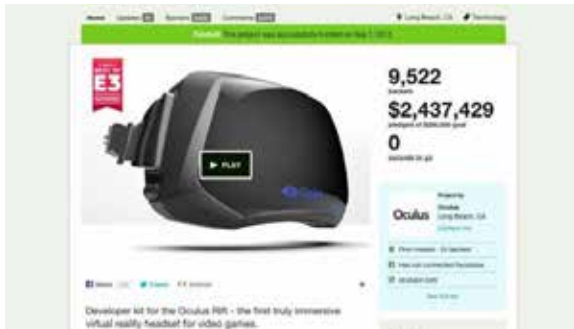


Fig 04. Oculus Rift Kickstarter's page screencapture, 2017, Made by the author

Only in 2012, with the Oculus Rift crowdfunding campaign, it was brought back to life. Nowadays our computers have evolved to a point where it is finally possible to achieve a fully 3D interactive environment. And thanks to the mobile device technology, we have lighter and compact headsets screens with precise movement tracking and better quality images, reducing motion sickness, and other psychomotor related issues.

Expanding Reality With The Velaslavasay Panorama Experience

This year, ZOAN company together with Velaslavasay Panorama, reconstructed the Effulgence in the North painting from the Velaslavasay Panorama in virtual reality.



Fig 05. The Velaslavasay 3D reconstruction project, 2017, Made by ZOAN, www.zoan.io.

The use of this kind of technology allowed us to make a digital recording of the current artwork being exhibited there. Panorama paintings demand a large effort for restoration and preservation. Since the panorama's purpose is to be an immersive experience, it's very hard to replicate the same kind of experience in other types of media. The sense of presence is essential and no other recording is able to give the visitor the same liberty in movements and curiosity—even 360 videos can't fill this sensorial void. Through VR, the sense of presence can easily be mimicked, artificially preserving the art in a way that wasn't possible before with the only limitation for now being tactile and olfactory senses. This technology allows us to expand the reality of the paintings, with the ability to animate still images and characters, which is what we did for the Velaslavasay Panorama. The user can see a transformation from the still painting to a 3D environment with all the icebergs and special effects, like the aurora borealis in the painting brought to life.



Fig 06. The Effulgence of The North 3D iceberg, 2017, Made by ZOAN, www.zoan.io.

Panoramas often use props between the painting and the viewing deck, which is called "faux terrain". This isn't a problem in a virtual space, where you can create the whole represented environment or event in 3D giving total freedom to the artist. For this specific case, we had to create similar looking objects to fill in the space between the painting and the viewing platform, but it's good to keep in mind that some newer 3D scanning technologies can also help us to digitize those props and make an even more precise re-creation of the space.

The interactive technology of video games also allows us to create easy and cheap solutions in accessibility. Adding subtitles for deaf individuals, or even a signal language video feed is not difficult. We can even add interactive audio guides for blind people, as I've done previously in another project back in 2015 for Itaú Cultural in Brazil. This interactive system with audio description allows the user to navigate freely between interest points and hear detailed descriptions of the environment and the presented artwork, instead of being hostage to a specific path along the museum experience.



Fig 07. *Sítio Santo Antonio 3D project that included a audiodescription system*, 2015, Jonathan Biz Medina, www.bizsd.com.br, all rights to Itaú Cultural.

In short, we can make any kind of experience with those new technologies, allowing not only to see and feel the paintings, but also be a part of it. Imagine being in the middle of the Waterloo Panorama in Belgium, being a soldier in Napoleon's last battle instead of simply observing the still paintings. The experience would be more powerful than one can imagine—contributing more to the learning potential and the visitor's interests in consuming this kind of art. It's also important to keep in mind that these technologies are portable. So, showing an immersive experience on the other side of the world is limited only to the capacity of carrying a notebook or even a smartphone. It's also possible to meet a relative, a friend or even a complete stranger in the virtual space and have the same experience together. And there's no limit on how many people can try it, you can bring a group of students, for example, and give a tour in the virtual space, or let them discover all the details by themselves.

What Does The Future Holds For Us?

The next emerging technology that has the potential of transforming our society/lifestyle is artificial intelligence (AI). AI systems use a neural network to search for information online, so basically each time we're asking a question, AI is learning. Every time an answer is found, this connection is saved, and it's used to quickly revisit the topic and search deeper in case of need, just like our brains do with neurons cells and our memory.



Fig 08. An example of a visitor asking IBM's Watson AI a question about the Portinari painting "Mestiço", Revista Exame, <http://exame.abril.com.br/tecnologia/inteligencia-artificial-da-ibm-ajuda-voce-a-entender-portinari/>.

For example, the Pinacoteca de São Paulo together with IBM artificial intelligence called Watson created an interactive experience where the visitors could use their smartphones to ask questions about different paintings and artworks. AI understands the voice command given by the visitor, then it gathers information on a database, and talks back to teach the visitor about art, just like having a conversation with a real person.

The more one uses it, the better the experience gets. Since all the data is stored to help out the next search or interaction, AI evolves with time. This can lead to more natural conversations, deeper knowledge, and even simulated personalities.

Concluding Remarks

Combining VR technology with artificial intelligence like the IBM Watson example can bring characters to life and create numerous interactions with the visitors. Instead of reading or hearing a pre-recorded fact, the visitors can ask directly about any subject they want. While the technologies are still developing, we should prepare ourselves to embrace new virtual and augmented reality technologies in order to better educate forthcoming generations who will rely on more immersive and gamified educational experiences. The times of boring learning methods will be over!

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Author Biography

Jonathan Biz Medina is a game designer from Brazil who uses video game technology to create entertainment, art, training and educational projects. He was employed for four years at Itaú Cultural, a cultural branch institute of the the largest bank in Latin America developing interactive solutions and products for in-house art expos and one museum. The projects developed there served as a basis for the proceeding years—exploring not only the use of videogame technology for art and educational products, but also matters of accessibility, 3D printing, and virtual reality for exhibitions, education, and entertainment.

After leaving Itaú Cultural, Jonathan Biz Medina created his own startup in order to develop digital interactive solutions for all types of clients. Since 2016, he has been producing VR projects as producer and CTO for the Finnish company ZOAN. Please visit the ZOAN website (www.zoan.io/) for more information on their VR projects. Previous content developed for museums in Brazil can be seen at BizSD’s website (bizsd.com.br).

The *Panorama-salon*: the *Google Cardboard* of 19th century

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Abstract

This article is related to the research "The immersive experience in 360°: investigation, representation and digital immersion in the city of Rio de Janeiro in the 19th and 20th centuries", developed in the FAU-UFRJ. The present work will (re)think the Panorama in 'old-new' and 'new-old' views: Panorama-salon's Patent versus Google Cardboard Virtual Reality Glasses. The *Panorama-salon* was the first optical device created to represent an immersive experience in the 360° format. Patented by Auguste Nicolas Nepveu, the central aim was to miniaturize the complex pictorial-spatial system presented in the Panoramas'rotundas, making the experience portable, more popular and accessible. Two hundred years later, *Google Cardboard*, a Virtual Reality device developed by Google, uses the smartphone as a stereoscopic viewer. The device consists in a specific application to project the smartphone's screen in stereoscopy. It uses a pair of lenses and a box, where the lenses are assembled with the mobile phone. This work will investigate these systems of immersive experiences, unquestionably similar, but also very different, in order to analyze the esthetics of portable immersive experience. Thus, 1:1 scale models of Panorama-salon and Google Cardboard will be built, with Rio de Janeiro's Panorama, the original engraving in Nepveu's patent, as the basis for this exploration.

Keywords

Panorama-salon, *Google Cardboard*, Virtual Reality, Immersion, Immersive experience, Panoramas of Rio de Janeiro.

Introduction: a brief history of graphical representation in Architecture

Graphical representation is the main foundation of Architecture and Urbanism. It should be regarded as a synonym of thought. In Architecture, to draw means to think, to reflect, to idealize, to conceive, to understand, to communicate spaces, buildings, squares, streets, neighborhoods or cities. Representing the *idea* of a space is the greatest challenge of this immense discipline. [1] Historically, architects have always come up with this issue, using various types of representation instruments, in their different periods, from ancient drawing pens and rude models to the most complex digital systems of nowadays. For most historians, from Renaissance in the fourteenth century, with the completion of the basilica *Santa Maria*

dei Fiore in Florence, by Fillipo Brunelleschi (1377-1446), the drawing and its graphical representation started to be considered as a design instrument, able to foresee the desire to realize, to concretize a building in a certain place. [2] Later, in the eighteenth century with Gaspard Monge's *Descriptive Geometry* (1746-1818), the graphical representation goes through a process of systematization, where the 'three-dimensional object' is represented by projection systems, conventionally, in at least three two-dimensional planes, in order to obtain areas, volumes and true length. Such systematization became very important for the nineteenth century with the Industrial Revolution, the emergence of new pieces and machines required greater rigor and precision. And it was with small alterations and inclusions that the graphical representation, and its consequent spatial representation, arrived at the beginning of twentieth century, consolidated in the plans, sections and facades, as one of the most widespread ways of representing Architecture and space.

Another moment and level: the observer's view *within* the graphical representation

Nevertheless, in 1948, Bruno Zevi already pointed out the necessity of other instruments for the graphical representation of the architecture and of the city. [3] At that time, Zevi envisioned cinema as the most interesting and promising media for the design of architectural spaces, but with an important remark: they should be presented in such a way as to offer the experience from observer's point of view. It is noteworthy that in approximately 70 years, this hopeful alternative was not followed to the letter. Cinema has changed, generated questions and reflections for other fields of knowledge, and other means of graphic representation have emerged with the advent and development of computers. However, we can say that Zevi's understanding of graphical representation of spaces is not so distant from what is now discussed and offered by Virtual Reality. The initial paradox real x virtual was once overcome, prevailing the correlation between the two worlds, the *Digital Space* and the *Concrete Space*, where both worlds are real. [4] Today, the observer - and / or user

of a digital system - is not restricted to the planar and two-dimensional interface of a computer, as he can enjoy the experience of being in a certain place. This possibility can be achieved by the high verisimilitude of computers and their simulators, increasingly developed for the five senses of the human being. [5] Graphical representation as the main foundation of Architecture starts to incorporate new themes and issues. The traditional plants, sections, elevations, plans and models are no longer sufficient for this new moment.

From this brief history, the present article seeks to investigate and analyze one of the new instruments of graphic and spatial representation that has been increasingly used in Architecture and Urbanism: *Google Cardboard*. Such purpose is not restricted to the technical issues of its use, but mainly, the understanding of the immersive experience which is provided, its parts and elements, and its comparison with the first optical instrument developed with the same idea, the *Panorama-salon* of Auguste Nicolas Nepveu.

Google Cardboard x Panorama-salon: two different optical devices with big a relationship

The exploration of immersive experiences as an instrument of graphic and spatial representation in Architecture is growing and notorious. [6] Undoubtedly, Google Cardboard has been one of the most used. It is an optical instrument of virtual reality, developed by Google, which uses the smartphone as a stereoscopic viewer. It consists in a specific app to project the smartphone's screen in stereoscopy, by the use of a pair of lenses and a box, where the lenses are assembled with the mobile phone. The set of lenses is very low cost and the design of the box can be obtained by a free download in the Internet. Its easy access and the possibility to offer a rich immersive experience through 3D model, old picture or photography have been fascinating more and more architects and students (fig. 1).



Fig. 1. Students using the Google Cardboard in their design process at FAU-UFRJ, 2017, Private Collection.

However, the discussions about the aesthetic construction of its experience should be done: which fundamentals it is related? How can it be improved? Its origin necessarily only comes from a digital solution? The present article will search for these questions.

If the History of Virtual Reality is directly related to the History of Panoramas, the same can be said about the History of 'Portable' Virtual Reality with the History of the development of optical devices, especially based on *Stereoscopy*. This 'new' technique of photography arises in 1844, with Scot David Brewster (1781-1868), a few years after the invention of photography [7]. *Stereoscopy* consisted in performing pairs of photographs in the same scene or object, viewed simultaneously in an appropriate binocular display - the stereoscopic - produced the illusion of three-dimensionality. In less than a decade, it spreads rapidly, but only in the end of the nineteenth century became more worshiped by the great artists and photographers [8].

It is possible to affirm that many optical devices of the twentieth century like the *View-Master* of Sawyer in 1939; *Sensorama* of Morton Heilig in 1957; *Ultimate Display* of Ivan E. Sutherland in 1965; *SD Pods* of Virtuality in 1991; *Virtual Boy* of Nintendo in 1995; Scuba VR, of Phillips in 1998; *eMagin* of 3DVisor in 2005; the brand-new, *View-MasterVR* and *Sansung Gear VR*, both in 2015; *Oculus Rift*, of Oculus and *HTC Vive*, both in 2016; and the *Google Cardboard* in this context, have the *Stereoscopy* as a base, because without it, they would not exist. But certainly, the origin of all of them, and its experiences, was happened even before the invention of *Stereoscopy*, with a registered patent called *Panorama-salon*.

The *Panorama-salon*, patented by Auguste Nicolas Nepveu, was the first optical device created to represent an immersive experience in the 360° format (fig. 2). Its central aim was to miniaturize the pictorial-spatial system presented in the Panoramas' rotundas, in a physical model, making the experience portable, popular and accessible. In place of the huge canvas, an engraving was used.

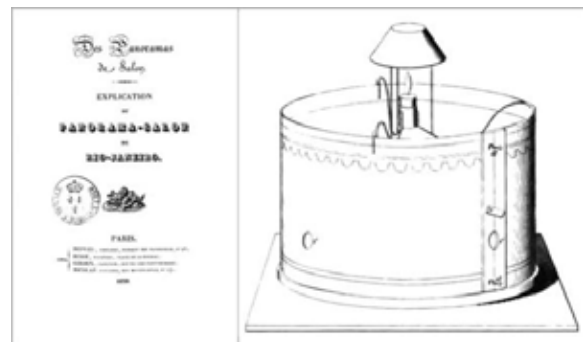


Fig. 2. Patent's first cover and model's perspective of the Panorama-salon, 1836, Private Collection.

Unfortunately, there isn't much more information about Auguste Nicolas Nepveu. But two important statements can be made about him and his patent: Nepveu owned a publishing house with a bookstore in the *Passages des Panoramas* of Pierre Prévost (1764-1823), in Paris, between 1820-1840; on the registration of the *Panorama-salon*, Nepveu decided to use the *Panorama of Rio de Janeiro*, painted by Felix-Émile Taunay (1795-1881) to come with the patent. This Panorama was presented in *Boulevard des Capucines*, at the third roundabout of Prévost, in 1824, just a few blocks near by the *Passages des Panoramas*. [8] The success of this first Rio de Janeiro's Panorama in Paris was noteworthy. Probably, because of this, Nepveu decided to open the patent with this Panorama. Certainly, the French inventor wanted to offer to his customers and visitors the same unique experience of those who visited the Rio de Janeiro's Panorama. They could have the 360° format experience without visit the Prévost's rotunda, and more: have it in their own home. But his invention was not restricted to a single engraving. In his description, he reports that Panoramas from other cities could also be purchased separately: Paris, from the Notre-Dame Cathedral, from the hills of Chaillot, from the hills of Montmartre, from the Pavilion of Flora in Thuilleries; Lion; Bordeaux; Rome; St. Petersburg, among others. [9]

Therefore, it is possible to affirm that the Nepveu's understating and interpretation, with his *Panorama-salon*, still remain with the idea of travel and transportation, but in a different way, scale and sense, with the pictorial-spatial system's miniaturization, and even more developed by the possibility of changing the picture/engraving which was presented in the model.

It is possible to realize that relationship between *Google Cardboard* and *Panorama-salon* goes far beyond two optical instruments to enjoy images in the 360° format. Two inventions in quite distinct moments of the History, two hundred years apart, but with many things in common: the desire to encode and interpret a pictorial-spatial experience into an immersive experience from the observer's gaze.

Therefore, it is considered fundamental to understand the two systems. As has been said previously, the *Google Cardboard* has an easy way to access, quite usual on these days. It can be obtained by a free download in the Internet, showing how to place the smartphone in a 'box' made by cardboard, and if it's needed, to do the fine adjustments. [10] However, we can't say the same of *Panorama-salon*, because its patent is the oldest of the optical instruments, and very far from the present days. Thus, it's considered that the reconstruction, analysis and consequent investigation of its patent, parts and elements, are necessary in order to understand how the immersive experience was created and assembled.

Objectives

In order to achieve the relationship between the *Panorama-salon* and *Google Cardboard*, the main objectives are:

- To Investigate the Nepveu's *Panorama-salon*, relating to its history and new digital immersion technologies, especially in comparison to *Google Cardboard*;
- To elaborate a digital and a physical model for *Panorama-salon* analysis, as cheap as possible;
- To identify the aesthetic of immersive experience presented by *Panorama-salon*, its essential elements, and in which ways they can be improved;
- To explore the model developed as the center of the viewer experience;
- To foster the discussion between students and researchers about immersion and immersive experiences in Architecture and Urbanism.

Theoretical Framework

In order to conceptualize and discuss immersion, especially immersive experiences, through History, Art History and Digital media, these 'key' authors and their researches were selected: Ernst Gombrich (1909-2001), *Art and Illusion* (2004); Oliver Grau (1965-), *Virtual Art* (2003); and Gordon Calleja, *In-Game* (2011). These and other authors were discussed and analyzed in the PhD thesis *O panorama e a experiência imersiva em 360°: do espetáculo de entretenimento aos meios digitais* (The panorama and the immersive experience in 360°: from the spectacle of entertainment to the digital media), by Thiago Leitão, PROURB / FAU / UFRJ (2014) [11].

These three authors can be understood as a single 'team' of researchers which form a set of investigations about immersion and immersive experiences at different moments in History, evidently, each author in his period and his context. But in a general way, and in chronological order, we can affirm that the following author not only returns the paths pointed out by the previous author, but also concludes part of his analyzes. The present investigation about *Google Cardboard* x the patent of *Panorama-Salon* of Nepveu, can be easily related to them.

For instance, Gombrich does not use the word 'immersion' he discusses about 'Illusion'. His research is directly related to the Art History, to Painting in a more specific way, and especially how the observer sees and enjoys Painting. He establishes ways to percept Art, and how this relationship happened through History. For him, it is the center of the experience, able to engage the observer up or push him away. Painting is the great illusory media capable to do it. In this sense, the 'illusion' analyzed by Gombrich can be considered a good step for immersion's discussions: observer x what he sees, a canvas or a digital projection, must be very well idealized and designed [12].

Oliver Grau, however, discusses illusionary media in a broader way, goes beyond painting and the observer, and their relation established by Gombrich. His research covers History of Art and the experiences of Virtual Art, emphasizing Panoramas and current immersive digital experiences in 360° format as the great illusionary media. Grau seeks to understand how current research increasingly codify and interpret the immersive experience that was offered by the Panoramas of the nineteenth century, and especially, how the illusion has been changing into immersion, in total immersion. More than understanding these two moments, the German researcher relates them. To achieve immersion, especially total immersion, the experience must be much more perceived than the system who generates it, and the observer should perceive the illusory media as minimum as possible. [13]

And finally, Calleja debates about how immersion is discussed today. It does not restrict his investigation in the total immersion worshiped by Grau, but, it seeks to understand levels of immersion that digital experiences can offer. Calleja focuses his research on video-games, but doesn't deny painting, panoramas, nor Virtual Art as illusory media, only directs his gaze to a more specific group. For him, the observer becomes a *user*: he does not only enjoy the experience, but is able to perform actions that can alter his own experience. Calleja establishes an extensive research from the earliest schematic and rudimentary games to the complex narratives of very high graphical and spatial verisimilitude. For him, six dimensions are set: *kinesthetic*, related to the movement; *spatial*, scenario or virtual environment's characterization; *emotional*, the sensitive and imaginative capacity between the user and the system; *ludic*, the set of rules and norms of the system itself; *narrative*, plot and story presented, and, *shared*, interaction of more than one user. From these dimensions, exemplifying with video-games, Calleja conceptualizes what is immersion. [14]

As already mentioned, these three authors discuss the idea of immersion and immersive experiences. Each author in his own way credits and identifies the greatest potential for immersion - possibly by predilection or by the period of their investigations were carried out - to a specific illusory medium: Gombrich, to painting; Grau, to Panoramas, while noting the interest in Virtual Art and digital experiences; and Calleja, to video-games. Their investigations can be directly applied in the discussion of Google Cardboard x *Panorama-salon*: the two systems work with immersive experiences, or through painting or digital media; both use the 360° format and establish levels of relationship between observer-user with the presented content; but mainly, both discuss how the aesthetic construction of their immersive experience in their illusory media. And it is based on this last statement that the following experiments were elaborated.

The first experience: the *Panorama-salon* how it is in the patent

We decided that the reconstruction of the *Panorama-salon* was necessary to full understand of decided for the full understanding of its immersive experience, a detailed analysis of its patent had to be elaborated.

In describing his invention, Nepveu points out some essential characteristics for its making, from which the main parts stand out: format should always be in a circular shape; the picture to be used could be an engraving, made of wood, metal, canvas, or cardboard; could represent an external or internal view; it would use a small magnifying glass to bring the observer's gaze to the drawing; the lighting of the entire system would be made by a small candle in a top support; and its diameter could not exceed six feet (about 1.80m) in such a way to fit in a small room. Probably, because of this, Nepveu decided to call it 'salon'.

Although Nepveu describes the main elements of his invention, it is not so clear how they form parts and how they articulate themselves. Some of them appear very generically, for example: it does not specify how the panorama would be structured in the base, if it would be self-supporting or if it would have some supporting structure, hidden of the observer's gaze; how would be the candle holder for lighting; how the lens would fit into the panorama; among others. It was evident the necessity to do a prototype to understand these parts in the whole system.

In order to understand the system devised by Nepveu, other sketches were done to try to fill these 'gaps', emphasizing that nothing was added or modified from his original idea. For that, Paul Laseau's method of *Graphic thinking* was applied: to use drawing as the main tool to create and speculate solutions, from the simplest object to the most complex Architecture, in a continuous but non-linear process of analysis, exploration, discovery and verification and communication (fig. 3).

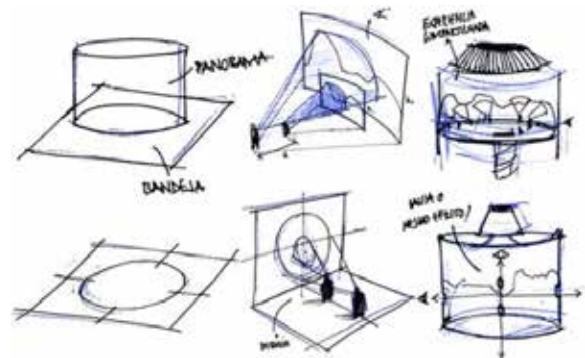


Fig. 3. Sketches designed to understand elements, parts and observer's gaze in *Panorama-salon*'s patent: base's definition, the relationship of depth x sight, and the perfect position for observer's eye, 2017, Private Collection.

From the prototype, finally was possible to experience the *Panorama-salon*. Each part was carefully designed and cut in 'papel-paraná', a kind of Brazilian cardboard. For this first experience, it was decided to use a reduced scale. The system was assembled using a base for support, the two engravings Rio de Janeiro's Panorama with four openings for the observer's eye, small candle and a cone trunk in a white paper for the light's reflection, exactly as it was described by Nepveu in his patent (fig. 4).

After its analysis, the following remarks could be done: the immersive experience didn't work; the sense of scale and depth were very low; the limits of the engraving had appeared; the candle light was weak; the observer's gaze was very restricted (fig. 5). Because of all this, the whole idea of immersion could not be reached. Another experience should be developed.



Fig. 4. The final prototype elaborated to reconstruct and analyze the *Panorama-salon*'s patent, 2017, Private Collection.

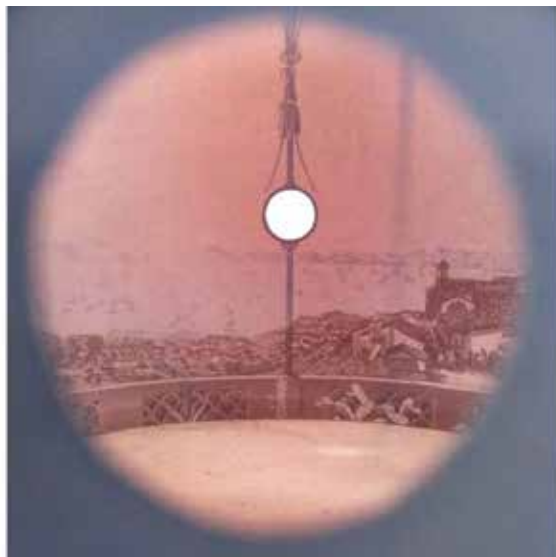


Fig. 5. The observer's view of the *Panorama of Rio de Janeiro* in the *Panorama-salon*'s patent, 2017, Private Collection.

The second experience: the *Panorama-salon* 'improved'

It is possible to say that the first experiment was not as successful as expected. The essay realized of Nepveu's patent didn't create the desired immersive experience, and evidently, was very far from a comparison with Google Cardboard.

It should be emphasized that such understanding must be analyzed carefully, since the way of view the present cannot be found in History and, consequently, of judging or criticizing Nepveu by its patent. It is a fact that the imaginary's capacity of the contemporary world is quite different and much larger than on the nineteenth century. Today the average man thinks, processes and produces images all the time, something that was not so ordinary and simple two hundred years ago. The apparent unsuccessful experience in rebuilding the Nepveu's patent should only be understood with one of the phenomena established by Grau when it conceptualizes what is immersion. Experience is directly related to its own time and context, and this is inseparable. How longer time between the observer and the moment of immersive experience's creation, minor is success rate.

However, it is believed that the investigations on *Panorama-salon* are not closed. Its patent can still offer quite rich and interesting questions about immersion, and, above all, a conceptual basis of comparison and exploration for Google Cardboard. Once the problems were found with the first essay can be 'solved', the immersive experience of its patent can be improved, generating other perceptions and observations.

In order to do this new experience, it turned to the original patent, but this time, instead of trying to reproduce it, it was tried to interpret it, aiming to understand how the elements and parts can better articulated, exactly the gap left by Nepveu. And immediately, the following question was realized: should the panorama be self-supporting? Or could it be supported by a separate structure? This reflection triggered a series of new questions (fig. 6).

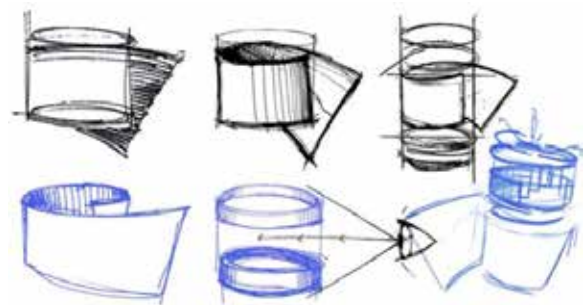


Fig. 6. New conceptual sketches were made to try to interpret the *Panorama-Salon*'s patent, 2017, Private Collection.

Once this new condition was established, with the panorama no longer self-supporting and there could be a structure that supported it, it was possible to imagine not only the structure for this purpose, but also to design a whole set of structural parts that could be easily assembled, disassembled, and stored in a box, as small as possible.

Each part of the Nepveu's patent received a new part for a specific function (fig. 7). Altogether five new parts were designed: *base*, with rails and balustrade; *stems*, to connect the lower and upper parts of the structure, and set position the observer's gaze - it is worth noting that the possibility of sharing the experience still holds, more than one observer can use the *Panorama-salon* simultaneously - ; *baldaquino's canopy*, to the upper band drum; *specific stems* to support the light source; and the *panorama* itself, now detachable and independent of the whole system.

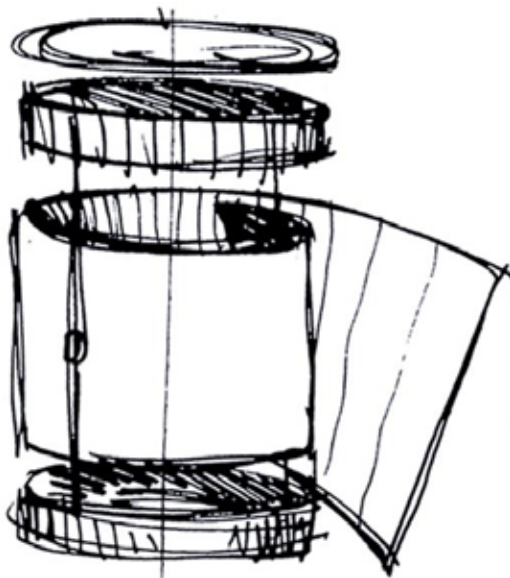


Fig. 7. The final conceptual sketch with a detachable structure: stems for the light, baldaquino's canopy, connecting stems and eye's position, base with balustrade, detachable panorama, 2017, Private Collection.

This new reflection arose from two original premises of Nepveu: portability, to facilitate the transportation of the patent and its experience; the possibility to change the panorama presented, substituting only the engraving(s) that compose it. Although with a new form – presented by these new elements – it can be said that the original idea of the French invention remains with a few changes.

After elaborating the final concept sketch, it was necessary to investigate and idealize how each of these five new parts should be made, in order to guarantee the simple and desirable rapid assembly, disassembly and storage process. Each piece went through the same research process with specific sketches (fig. 8).

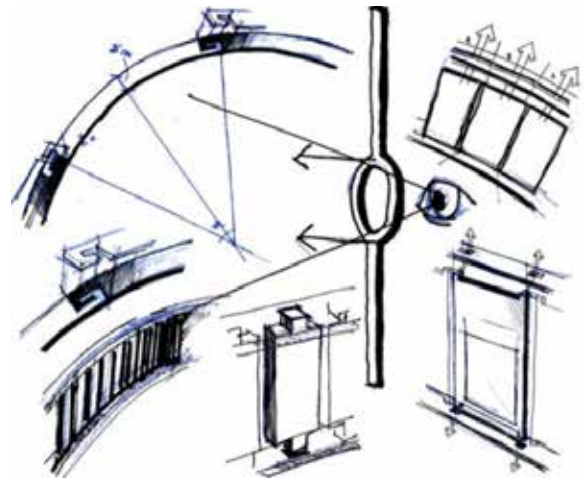


Fig. 8. Other sketches were done to understand and verify the new pieces for the patent's improvement: base, stems, baldaquino's canopy and among other, 2017, Private Collection.

It is important to emphasize that the idealization of this new set of pieces was not restricted to the system's structure, but also to solve another problem found in the first experiment: the undesirable presentation of panorama's limits, which diminishes the immersive experience offered. Thus, in addition to resolving the structure's concept, the new parts also aid to compose the improvement of the immersive experience. From all the sketches done, it was necessary to check them, in order to understand how the new parts would fit together. A 3D model was designed to aid and make the possible necessary adjustments (fig. 9).

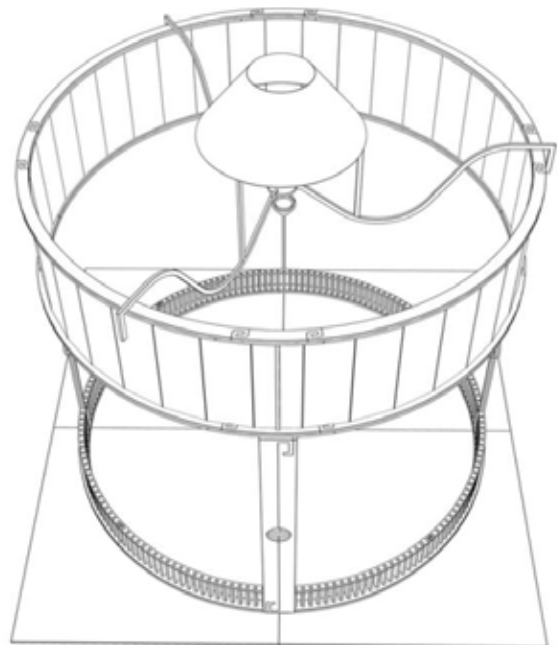


Fig. 9. 3D model to set the new pieces, 2017, Private Collection.

The idealization of the 3D digital model was a very important part of the conception's process to improve the *Panorama-salon's* patent. It was through its realization that was possible to draw in detail the fitting of all pieces. Initially, a rudimentary model was developed in SketchUp and later in AutoCAD. This moment of digital drawing generated an important reflection: all pieces of the set should be divided in four equal parts, in quadrants of a circumference. This decision was taken for two main reasons: first, in order to guarantee another important premise of Nepveu's patent, the circular shape of the whole system; second, don't have a very large piece; instead of a big circumference, four smaller arcs would be made, and together they would fit the desired circumference.

It was also from the 3D model that it was possible to define the total number of pieces to be used: four squares for the base; four rails to the base; eight rails for the lower and upper parts of the balustrade; one-hundred-seventy-six pins for the balusters; four vertical stems to the observer's eyes; sixteen rails for the lower and upper parts of the canopy; thirty-six rectangles for the canopy; three curved rods, specific for light support; a small cone trunk for light reflection; twelve clips to adjust the panorama at the top; and a ruler to fit it on the circumference. The whole set consists of 264 pieces, plus the panorama (fig. 10).

In front of this estimate and with a careful verification of all fittings designed, it was possible to realize the digital fabrication process of the 3D model. For that purpose, the university's laser cutting machine was used. The material chosen was the MDF (Medium Density Fiberboard). All pieces were placed in 45 x 80 cm plates, using a total of four and half plates. It was spent about four hours to make the cut of all pieces. And finally, the physical model can start to be assembled.



Fig. 10. The largest parts of Nepveu's interpretation model already assembled: bases, rails, balustrade, stems, baldaquino's canopy and specific stems for the light, 2017, Private Collection.



Fig. 11. Pictures of the whole process of assemble, from top to bottom: bases and balaustrade, baldaquino's canopy, setting the eyes position on panorama, structure done with the panorama being involving, 2017, Private Collection.

The assembly process was divided into four distinct moments: first, the bottom with the base, rails and balustrade; second, the top, with canopy, rails, and support for lighting; third, the connection of the two previous parts with the stems for observation; and lastly, the position of the panorama with clamps and ruler (fig. 11).

The biggest challenge was precisely to assemble the balusters. After a few attempts, it was decided this part would be glued, only this one in the entire system, in order to facilitate future assembly, disassembly and storage. Once with the four parts with forty-four pins each, the model could be assembled in 15 minutes. And finally, the experience can be verified and observed (figs. 12-13).



Figs. 12-13. Pictures of the physical model finished, from top and side: a detachable structure brought an immersive experience to the *Panorama-salon's* patent, 2017, Private Collection.

Concluding Remarks

The investigation of *Panorama-salon's* patent and its possible relationship with *Google Cardboard* was a very successful experience. Both are systems of graphic and spatial representation of Architecture, Cities, and/or themes of Painting, which provide immersive experiences related to their illusory mediums and their respective moments, which are certainly very distant and different, but also have a lot in common.

The first option to strictly follow the description contained in the original patent, despite the numerous negative constraints presented, and near zero immersive experience, was essential for the success of the second essay and the *Google Cardboard* comparison itself.

The *Panorama-salon* proved to be a non-immersive system. A priori could be even removed from any comparison with a digital system. However, it was through its interpretation that the second test was reached, no longer following exactly the description of the patent.

Understanding the main elements of the *Panorama-salon*, how these would constitute parts, and how they would compose the whole system, was essential in resolving some of the earlier characteristics that hindered the engendering of its immersive experience. The option to establish a detachable structure allowed going beyond. From the idealization and digital fabrication process of the elaborated model, the panorama could be valorized, which triggered in a much richer and satisfactory immersive experience. This moment was fundamental to the success of this investigation.

The analysis of some themes found in the *Panorama-salon* should also be well emphasized: light, depth, atmospheric perspective, scale, visual field, observer, limits and colors were all better in the second essay, in the new model, which again, provided an immersive experience, even more improved (fig. 14).

Of all these themes, two required special attention: light and scale. Previously, the lighting was very weak and did not generate the strength necessary to irradiate the panorama. In the final model, the candle was eliminated and one LED light of a cell phone was used, which could increase its power considerably. And more, a rather unexpected observation: the position of light, whether higher or lower, has significantly altered the colors of the panorama. The second remark was the scale. Its notion was much more contemplated in the final model than in the initial prototype. The simple increase in size favored the immersive experience. Even though Nepveu has indicated a range of specific dimensions for the realization of his patent, it can be stated that the final diameter of the circumference cannot be very small; otherwise, it will not generate a great immersive experience (fig. 15).

These and other small conclusions have profound relevance because they are exactly the themes that should be further investigated and explored in digital experiences, especially in the immersive experience promoted by *Google Cardboard*.

And finally, the relationship between *Panorama-salon* and *Google Cardboard*, which knowledge can be learned from the first portable immersive experience of the nineteenth century and coded for a portable immersive experience of the twenty-first century, generated new questions that would not had been previously glimpsed: how would be the patents of the improvements of *Panorama-Salon: Cyclorama* and *Authorama*, by Nepveu? Which improvements would be expected? What could be learning from them? Is there any relationship to be exploited with *Google Cardboard*? Further researches and investigations must be done to analyze and contemplate these and more questions.



Fig. 14. *The new vision offered to the observer in the improvement of the Panorama-salon's patent: a better view of Rio de Janeiro's Panorama*, 2017, Private Collection.



Fig. 15. *A view from inside the Panorama-salon with a fish-eye lens: the whole landscape of Rio de Janeiro from de city center can be seen*, 2017, Private Collection.

Notes

1. From Latin: *idea*. We refer this idea as the original idea, the germinating idea, and the idea that gives rise to other ideas. It is from its definition that others will be later aggregated, combined and interlaced. Laseau, Paul. *Graphic Thinking for Architects and Designers*. New York. John Wiley and sons, 3rd edition, 2001, p.8.
2. Barki, José. *O Risco e a Invenção: Um Estudo sobre as Notações Gráficas de Concepção no Projeto*. Thesis (Phd in Urbanism) - Universidade Federal do Rio de Janeiro, PROURB / FAU, 2003, p.52.
3. Zevi, Bruno. *Saber ver Arquitetura*. São Paulo, Martins Fontes, 6th edition, 2000.
4. Tramontano does not solve the Real x Virtual dilemma. He only understands the two worlds as two spaces of man, one as the extension of the other. For differentiation, denominates as *Digital Space*, as the virtual world of computers, and *Concrete Space*, as the world where we live, both are real and inseparable. Tramontano, Marcelo Claudio. *Novos modos de vida, novos espaços de morar - Paris, São Paulo, Tokyo: uma reflexão sobre a habilitação contemporânea*. Thesis (Ph.D. in Architecture) – Universidade de São Paulo, USP, 1998.
5. Grau, Oliver. *Virtual Art: From Illusion to Immersion*. Cambridge, MA: MIT Press/Leonardo Books, 2003.
6. Dixon, Amanda. "Must have technology for architects in 2017", *Brantley*. June 10, 2017, accessed August 25, 2017, <http://www.brantleyagency.com/must-have-technology-for-architects-in-2017/>
7. Wanderley investigates the amateur photographer Guilherme Santos and points him out as one of the pioneers of stereoscopy in Brazil. The article is related to *Brasiliiana Fotográfica*, a website created by the Fundação Biblioteca Nacional and the Instituto Moreira Salles with the objective to create visibility and to stimulate debates and reflections of original collections of photographic documents related to Brazil. Wanderley, Andrea C. T. "O fotógrafo amador Guilherme Santos (1871- 1966)", *Brasiliiana Fotográfica*, July 28, 2016, accessed August 25, 2017, <http://brasilianafotografica.bn.br/?tag=estereoscopia>.
8. Ibid., Wanderley, Andrea C. T.
9. We already had presented this Panorama and its history to the International Panorama Council during the 21th Conference in Pleven/Bulgaria, in 2012. The article "The Panorama of Rio de Janeiro by Félix-Émile Taunay" describes exactly the origin of the Panorama, the artists and painters involved, the correct place of its exhibition, and its copies with different retouches. For more informations see: Leitão, Thiago. *O panorama e a experiência imersiva: do espetáculo de entretenimento aos meios digitais*. Thesis (Ph.D. in Urbanism) – Universidade Federal do Rio de Janeiro, PROURB / FAU, 2014.

10. Nepveu, A. N. *Cyclorama, Authorama, perfectionnements des panoramas de salon*. Paris: Librairie Nepveu, Passage des Panoramas, n°26, 1832, p.8-10.
11. It can be easily accessed in the Google's website. The most part of examples are free, Accessed August 25, 2017, <https://vr.google.com/cardboard/get-cardboard/>
12. Leitão, Thiago. *O panorama e a experiência imersiva: do espetáculo de entretenimento aos meios digitais*. Thesis (Ph.D. in Urbanism) – Universidade Federal do Rio de Janeiro, PROURB / FAU, 2014.
13. Gombrich, E. H. *Art and Illusion: a Study in the Psychology of Pictorial Representation*. London: Phaidon Press, 6th edition, 2004.
14. Grau, Oliver. *Virtual Art: From Illusion to Immersion*. Cambridge, MA: MIT Press/Leonardo Books, 2003.
15. Calleja, Gordon. *In-Game: From Immersion to Incorporation*. Cambridge, MA: MIT Press, 2011.

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