

Aurélio da Paz dos Reis: Stereoscopic Photography and Panoramic Visions¹

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Abstract

Aurélio da Paz dos Reis, the pioneer who introduced cinema to Portugal in 1896 with *Saída do Pessoal Operário da Fábrica Confiança*, later pivoted to stereoscopic photography, leaving an extraordinary archive of 7,294 glass plates. This paper examines how Paz dos Reis navigated the transition from moving image to a sophisticated “aesthetic of immersion” through stereoscopic and panoramic photography. Utilizing the technical versatility of the Mackenstien *jumelle stéréopanoramique* camera, he bridged the gap between the monumental 19th-century panorama and the portable, domestic intimacy of the stereo card. By reconfiguring the device’s internal divider and lens alignment, Paz dos Reis explored the duality of monocular and binocular vision, adapting large-scale immersive strategies to portraiture, landscapes, and social documentation.

This study analyzes his work through the lens of media archaeology, arguing that his panoramic group portraits and urban scenes—captured in Porto, Paris (1900), and Rio de Janeiro (1909)—functioned as “time capsules” of the “effect of presence.” We contend that his practice was not merely a commercial endeavor but a deliberate visual strategy to document Portuguese national identity and the collective experiences of modernity.

Ultimately, the stereoscopic legacy of Paz dos Reis demonstrates a critical genealogical link between Victorian optical innovations and the immersive logics of contemporary digital visibility.

Keywords

Stereoscopy, Aurélio da Paz dos Reis, Panorama, Media Archaeology, Mackenstien Camera, Immersive Visuality

1. Introduction: From Cinema to Stereoscopic Photography

In the early 20th century, the Portuguese photographer and filmmaker Aurélio da Paz dos Reis (1862–1931) deployed a sophisticated array of visual technologies that bridged the gap between intimate domestic portraits and expansive panoramic vistas. While widely recognized as Portugal’s inaugural cinematographer, Paz dos Reis’s extensive work in stereoscopic photography remains an underappreciated yet crucial dimension of his career. His practice elucidates the complex intersections of spectacle, technology, and cultural identity during a period of rapid visual transformation.

This article analyzes the role of stereoscopic and panoramic imagery as both documentation tools and immersive experiences that foreshadowed contemporary media spectatorship. By examining Paz dos Reis’s compositions, this study highlights their role in mediating personal memory and national narrative, private life and public spectacle, and the inherent tension between stillness and movement.

Methodologically, the study approaches Paz dos Reis through media archaeology. Rather than narrating an uninterrupted march of technical progress, this perspective attends to the ruptures, dead ends, and recurring desires that shape how visual media emerge and are received. Media archaeology is a plural rather than a unified field, and the present analysis aligns with the strand

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that treats historical apparatuses as objects to be re-examined and, where possible, re-operated—an orientation exemplified by Mannoni and Crangle's archaeology of pre-cinematic optics [1] and by the experimental, object-centred practice described by Ellis and Williamson [2]. Read through this lens, the affinities between the panorama, the stereoscope, and present-day virtual reality are treated not as evidence of a single evolutionary line but as a prompt to ask what was specific to each device, and which cultural longings for presence and immersion it answered in its own moment. Accordingly, Paz dos Reis's apparatus and images are examined less as anticipations of the digital than as a distinct configuration of optics, commerce, and national imagination—a framing intended to hold his achievements and their commercial and ideological ambivalences in the same view.



Figure 1: Self-portrait of Aurélio da Paz dos Reis in his garden. Vertical panorama, 1910, Porto, Portugal. Source Portuguese Photography Centre (CPF) – Digitarq [3]. ²

Cinema was introduced to Portugal in 1896 by Aurélio da Paz dos Reis, who is widely acknowledged as the founder of Portuguese cinema. He directed the inaugural Portuguese films

² This portrait defines Paz dos Reis through personal sophistication and a symbolic backdrop. Positioned slightly off-center in the Nova Cintra Garden, his "Edwardian dandy" appearance and polished attitude reflect the forward-thinking ideals of a republican in the year of the Republic's establishment. More than a personal image, this silent staging captures a man between nature and technology, tradition and progress.

featuring national themes, particularly *Saída do Pessoal Operário da Fábrica Confiança* [*Exit of the Workers from the Confiança Factory*][4][5].³

However, Paz dos Reis's cinematic output often lacked “genuine” avant-garde experimentation; instead, cinema was promptly designated a specific function: to facilitate the dissemination and preservation of Portuguese cultural heritage. His documentaries captured national motifs—markets, street scenes, and traditional dances—framing the medium as a tool for cultural representation rather than purely artistic expression [6].

Paz dos Reis objective was unequivocal: to utilize moving images to advocate for Portuguese life and culture internationally, particularly in Brazil, where he aspired to forge a commercial alliance. Nevertheless, the agreement collapsed, and the capital invested in equipment and production was never recouped [5]. Like Edison and even the Lumière brothers and Paz dos Reis may have initially undervalued the enduring profitability of cinema. Nonetheless, he commenced filming vignettes of quotidian Portuguese life, establishing a cinematic approach focused on cultural documentation. This disappointment marked a decisive turning point in his career.

Following the commercial failure of his cinematic venture, Paz dos Reis redirected his focus toward photography with revitalized intent. His career coincided with Porto's industrial expansion in the 1880s, a period characterized by the proliferation of photographic studios, increased capital concentration, and the widespread popularity of themed photographic albums [7]. By 1881, prominent studios such as *União and Biel* dominated the market, establishing a visual language that was both commercially viable and culturally ingrained [8].



Figure 2: Praça do Infante D. Henrique and Palácio da Bolsa. Stereoscopic negative, 1897, Porto, Portugal. Same source as Fig. 1.⁴

Parallel to his film endeavors, Paz dos Reis became profoundly involved in stereoscopic photography, documenting monuments, landscapes, and regional traditions in northern

³ Out of 30 films Paz dos Reis made, only four have survived, along with fragments and a film camera found by cinephile Henrique Alves Costa in 1978. Early cinema was single-shot, outdoor, narrative-free, and fixed-perspective. Early screenings were seen as technical spectacles, showcasing the novelty of moving images rather than artistic experimentation.

⁴ The symmetrical palace backdrop is animated by two carriages, symbolizing the 19th-century merchant bourgeois wealth of Porto's economic center.

Portugal. The cultural significance of this work was such that French President Émile Loubet received several of these images as diplomatic gifts, highlighting their role in Portuguese cultural diplomacy. As a dedicated Republican, Paz dos Reis also actively participated in the political shifts that culminated in the 1910 declaration of the Portuguese Republic, often using his lens to capture the ideological transition of the nation.



Figure 3: Vertical panoramic image. The siege of Porto, during the bubonic plague outbreak, 1899. Porto, Portugal. Same source as Fig. 1.

A landmark in his career occurred in 1899 during the bubonic plague outbreak in Porto. Paz dos Reis produced visual documentation that remains one of the few extant photographic records of the epidemic. His imagery captured not only the medical crisis—featuring doctors such as Ricardo Jorge, Câmara Pestana, and Bento Silva—but also the broader social atmosphere of the city under siege [9].⁵

His legacy, therefore, extends from that of an urban street photographer to a pioneer of Portuguese cinema, providing an unmatched visual record of the social, cultural, and political life of his era. As noted by archival experts, his collection at the *Centro Português de Fotografia* (CPF) is unique for containing the only known images of historical epidemics in Porto, a subject of significant contemporary interest [7].⁶

Ultimately, this shift to photography enabled him to refine his visual strategies, particularly regarding the treatment of space, perception, and the mediation of social experience.

⁵ '[... current events' such as the procession celebrating the centenary of India in Lisbon in 1898; doctors Ricardo Jorge, Câmara Pestana and Bento Silva in Porto during the outbreak of bubonic plague; a crowd during the siege of Porto [...].' (Peres, 1984).

⁶ 'Of all the funds and collections that the CPF holds, and of the various themes that are part of its collection, it was precisely in Aurelio's legacy that we found the only images on a subject that arouses so much interest today - epidemics - in this case, images of the bubonic plague in Porto. (Falcão, 2021).



Figure 4: Bubonic plague outbreak in Porto: Fire Brigade implements disinfection measures through the incineration of dwellings. 1899. Porto, Portugal. Same source as Fig. 2.

2. Themes and Visual Techniques

Building upon his early cinematic ventures and stereoscopic experiments, Paz dos Reis developed a sophisticated visual language that profoundly impacted modern Portuguese visual culture. His diverse oeuvre—spanning cinema, stereoscopy, press photography, and portraiture—offers a comprehensive understanding of technological advancement, documentary methodology, and symbolic communication at the turn of the 20th century.

In this context, stereoscopic photography emerged as a primary visual strategy. Rather than a mere technical exercise, it served as a medium to immerse the viewer in the textures of daily life, public events, and cultural rituals. Paz dos Reis masterfully aligned technological form with cultural intention to create emotionally resonant, immersive “tableaux.” According to Peixoto [10], this approach fostered a “notion of visual spectacle [...] eliciting feelings of wonder and admiration in the viewer”.

These images effectively amalgamate the spectacle of the subject with the spectacle of the medium, creating a dual visual effect where both content and technology serve as simultaneous sources of intrigue. This synergy reflects an era when optical devices were actively transforming human perception, and photography was acquiring cultural legitimacy as both a rigorous tool for documentation and a refined form of entertainment.

Recognized as “the best example of this industrial reality” in Portugal [10], Paz dos Reis actively commercialized his stereoscopic photographs under the brand *Estereoscopia Portuguesa*, operating from his shop in Porto. His collection, now preserved at the Portuguese Centre of Photography (CPF), comprises more than 7,200 stereoscopic photographs in diverse formats: negatives, positives, printed on cardboard, and transparent paper.⁷

This industrial paradigm of image production and dissemination reflects an early convergence of media technology and capitalist venture, positioning Paz dos Reis within the broader European trend of commodified visual culture. His practice functioned as both a documentation of national identity and an engagement with the burgeoning global market of

⁷ The collection is housed at the Portuguese Centre of Photography (CPF) and includes various a variety of formats: glass plate negatives, positive prints on opaque and translucent paper, and cardboard-mounted stereoscopic cards.

visual consumption. During his frequent travels to Paris, he immersed himself in the dynamic social and technological milieu era; his fascination with innovation led to a firm conviction that “animated photographs” (cinema) and stereoscopy represented novelties with significant commercial potential [5].⁸

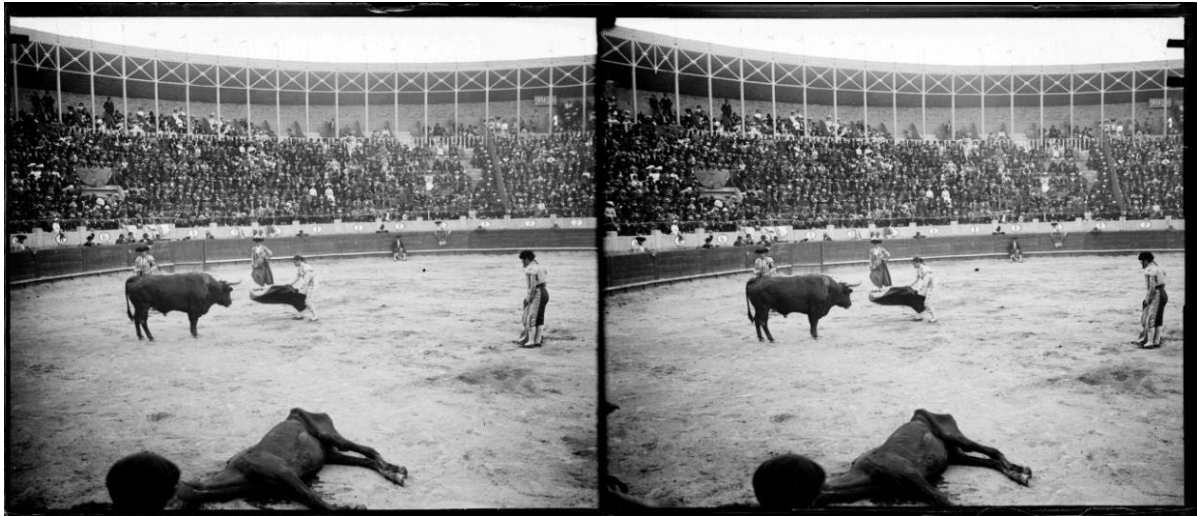


Figure 5: Bullfight at Praça de Pontevedra. 1901, Spain. Same source as Fig. 2.⁹



Figure 6: Female tennis players. 1901. Portugal. The tennis net and players' period attire in this early 20th-century scene highlight the sport's aristocratic elegance and evolving gender norms, offering a vivid reflection of Portuguese high society. Same source as Fig. 2.

A definitive instance of this architectural and symbolic mastery is found in his series from the 1900 Paris Universal Exhibition. Utilizing an elevated, axial perspective, Paz dos Reis captured monumental footbridges and domed pavilions, demonstrating the stereoscopic capacity to convey both extreme spatial depth and national magnificence. Notably, his rare nocturnal

⁸ At the 1900 Exposition Aurélio da Paz dos Reis was awarded a silver medal — a remarkable achievement at the time. He later began including this distinction in his series of stereoscopic cards. Presented himself as a florist and amateur photographer, active in both countries.

⁹ Strong spatial composition and tonal contrast create a dramatic, immersive ritual in this bullfight scene, where the tension between the fallen bull and the spectators evokes powerful theatrical energy.

photograph of the Eiffel Tower—illuminated by artificial light—serves as a testament to his technical proficiency, achieving tonal clarity under challenging long-exposure conditions.



Figure 7: Paris: Universal Exhibition. Eiffel Tower, night. 1900. Paris, France. This rare nighttime stereoscopic photo captures electric lighting with impressive clarity. The symmetrical composition and silhouetted figures add depth to this celebration of modern technology, reflecting the era’s spirit of “technology recording technology.” Same source as Fig. 2.

Beyond Paris, Paz dos Reis’s 1909 expedition to Rio de Janeiro established him as a pivotal figure in the propagation of stereoscopic imagery across the Lusophone world. His production was far from merely contemplative; it carried a clear strategic ambition. In both the 1900 Paris and 1909 Rio de Janeiro exhibitions, his stereoscopic and panoramic views functioned as visual “calling cards” for Portuguese identity, showcasing the nation’s landscapes and modern progress to an international audience [11].



Figure 8: View of Rio de Janeiro from the “Comercio” building. 1909. Rio de Janeiro, Brazil. Same source as Fig. 2.¹⁰

¹⁰ This stereoscopic view of Avenida Central (now Avenida Rio Branco) uses a symmetrical composition and sharp detail to capture the city’s Belle Époque modernization. The prominent central sculpture and the movement of pedestrians and vehicles anchor a scene that reflects the era’s significant Europeanization and architectural sophistication.

Aurélio da Paz dos Reis significantly contributed to the advancement of visual language in the Portuguese press, transcending stereoscopy. During an era characterized by pervasive illiteracy, photography emerged as an essential communicative instrument, capable of conveying journalistic information with unprecedented visual efficiency. His work coincided with the rise of the illustrated press, which sought to modernize public discourse and amplify narrative impact through direct visual representation.

Grácio identifies Paz dos Reis as a member of the inaugural generation of Portuguese photojournalists, alongside prominent figures such as Joshua Benoliel, António Novaes, and Arnaldo Fonseca [12]. This pioneering collective established the visual syntax of early photojournalism, merging aesthetic sensibility with a rigorous commitment to documenting socially pertinent events.



Figure 9: Inundations of the Douro. Vessel immobilized on the riverbank. 1909. Porto, Portugal. Same source as Fig. 2.



Figure 10: Hilda Ophélia Paz dos Reis playing with cats. 1909. Porto, Portugal. Same source as Fig. 2.

As Grácio further notes, Paz dos Reis was instrumental in developing a contemporary visual language for journalism, distinguished by his “capacity to capture pivotal moments and

communicate information through photography". In this context, his images functioned as more than mere illustrations; they were semiotic entities capable of conveying complex narratives independently of textual elucidation, effectively transforming the photograph into a primary source of news [12].

The postcards produced by Aurélio da Paz dos Reis provide a distinctive insight into the visual interplay between territory and identity in early 20th-century Portugal. Far from being mere personal keepsakes, these meticulously arranged and stereoscopically enhanced images functioned as instruments of collective memory. They embodied local festivities while conveying broader urban aesthetics, encapsulating an idealized representation of urban life [13].

Paz dos Reis frequently utilized New Year greeting cards to showcase family portraits, elaborate costumes, and studio props, often featuring his youngest daughter, Hilda. These compositions, captured with a stereoscopic camera, represent a sophisticated blend of personal expression and technical innovation. They illustrate how domestic photography can function concurrently as a private ritual and a form of public communication, a mediation between the intimate sphere and the social gaze.

Paz dos Reis's oeuvre encompasses a vast thematic spectrum, including landscapes, street scenes, and portraits of actors, politicians, and celebrities. He exhibited a marked inclination for theatrical portraiture, creating studio images intended for commercial distribution that now serve as a significant visual repository of the era. A prime example is the portrait of Lucília Simões, which integrates Symbolist aesthetics with the figure of Salomé, invoking themes of performance, femininity, and the burgeoning cult of celebrity.



Figure 11: Portrait of Lucília [Simões] (Salome). 1925. Porto, Portugal. In this portrait, technology and theater combine through delicate lighting and stereoscopic depth to create a refined, intimate atmosphere. Same source as Fig. 2.

Paz dos Reis effectively interconnected private family imagery with public portraiture, merging personal memory with national narrative. His photographs demonstrate a purposeful endeavor to compose, preserve, and disseminate symbolic depictions of Portuguese society. Whether artistic or documentary, his studio portraits combined aesthetic sophistication with the principles of publicity.

Furthermore, Paz dos Reis actively documented the political and social transformations that culminated in the proclamation of the Portuguese Republic in 1910. As a dedicated liberal republican, he actively engaged in political conflicts and visually documented significant

occurrences, including public protests, urban reforms, and the bubonic plague epidemic in Porto. His camera functioned not merely as a documentary device, but also as a political instrument—connecting ideology and visual documentation.



Figure 12: Horizontal panoramic image. Hilda Ophélia da Paz dos Reis, with famous Republicans, including future Republic presidents. 1911. Porto, Portugal. Same source as Fig. 1.

In the early 20th century, as stereoscopy experienced a revival in Europe, Paz dos Reis strategically transitioned to photography, perceiving it as a more stable and lucrative endeavor than cinema. He marketed stereoscopic images at his flower shop in Porto, merging commerce and image production in a manner that persisted until his demise in 1931. His photographic legacy, comprising family portraits, public events, and symbolic compositions, represents one of the most extensive stereoscopic collections in the Portuguese public archives today.

Beyond his private studio portraits and domestic postcards, Aurélio da Paz dos Reis directed his lens toward the collective experiences of modernity. His panoramic and stereoscopic imagery aimed not only to document public life but to actively engage the viewer, transforming the observer into a participant within an expansive visual field. This aesthetic and technological shift was underpinned by a century of optical advancements that pushed the boundaries of visual representation. By the 1900s, these developments allowed Paz dos Reis to fully exploit the immersive potential of stereoscopic and panoramic techniques.¹¹

Paz dos Reis's practice progressively adopted methods that transcended solitary documentation. His compositions sought to immerse the viewer in the visual field, facilitating a profound investigation of spatial experience and emotional presence. Panoramic stereoscopic photography represents the pinnacle of these immersive aspirations. Produced for touristic, educational, and commemorative purposes, these images elicited what scholars define as the

¹¹ Significant advancements in 19th-century photography encompass: the daguerreotype (Daguerre, 1839), which generated singular images on silvered copper plates; the calotype (Talbot, 1841), facilitating paper negatives and reproducibility; the wet collodion process (Archer, 1851), providing sharper glass negatives; the extensive utilization of collodion for both studio and field applications during the 1850s; the creation of gelatin silver bromide dry plates (Maddox, 1871), permitting deferred development; the emergence of portable cameras in the 1880s, which democratized photography for amateurs; and ultimately, the popularization of stereoscopy in the 1890s via the introduction of dual-lens cameras.

“effect of presence.” This sense of proximity depended not only on the subject matter but also on rigorous formal composition: wide-angle framing, frontal alignment, layered depth, and meticulous detail combined to create spaces that appeared both concrete and inhabited.



Figure 13: Horizontal panoramic image. Gualterian Celebrations of 1908 [Female Choir]. 1908. Guimarães, Portugal. Its frontal alignment and exceptional depth of field foreground a large group of children, capturing facial expressions. Same source as Fig. 1.

Crowd scenes and large group portraits most clearly exemplify this immersive effect. According to Flores, the individuals in these portraits “populate and appear to emerge from his images,” transforming from mere subjects into “agents of history”. [14] Typically arranged frontally with limited depth, these compositions resemble theatrical tableaux, harmonizing documentary realism with a deliberate artistic purpose. Their visual grammar—described as “broader than profound”—fosters a multi-layered temporality where presence, memory, and historical awareness intersect, prefiguring the immersive logics of contemporary media.



Figure 14: Horizontal panoramic image. Paz dos Reis and his family in their garden. 1908. Porto, Portugal. The image illustrates the parallax effect; foreground figures show a slight displacement between perspectives, while the background remains stable. Same source as Fig. 1.

3. The Mackenstein Camera and the Genealogy of Immersion

This immersive vision was primarily facilitated by a single, sophisticated instrument: the Mackenstein jumelle stéréopanoramique camera [15]. Produced in Paris at the turn of the 20th century, the model employed by Paz dos Reis—presumably the La Francia designed for 6×13 cm glass plates—was engineered for effortless transitions between stereoscopic and panoramic modes.

The camera's technical versatility was central to Paz dos Reis's practice. By repositioning one lens to a central axis and removing an internal wooden divider, the photographer could transform the stereoscopic device into a panoramic camera. This dual functionality allowed for six stereo pairs or six panoramic images to be captured on a single set of plates, providing a fluid adaptation to the specific aesthetic demands of the subject.



Figure 15: The stereoscopic camera of Aurélio da Paz dos Reis. Mackenstein, Paris, France, circa 1906. Displayed at the Portuguese Centre of Photography, Porto. Carl Zeiss lenses f: 1.8/110 mm, single-speed and focal plane shutter; collapsible sports viewfinder; wooden chassis encased in leather. Photographic print created by Renato Roque.

Constructed with a sturdy leather-clad wooden body, the device featured high-quality Carl Zeiss lenses (f:1.8/110 mm) and a collapsible sports viewfinder. Compact yet sophisticated, the Mackenstein was ideally suited for field application, enabling Paz dos Reis to navigate between the intimacy of studio portraiture and the monumental scale of urban landscapes with unprecedented technical agility. This “aesthetics of flexibility” underscores his role not just as a documentarian, but as a master of the technological affordances of his era.

The panoramic aspirations of Paz dos Reis reflect a broader lineage of optical advancements, most notably Thomas Sutton's 1859 hemispherical water-filled lens [16], which could record

120° fields of view.¹²¹³ Although separated by decades, both Sutton and Paz dos Reis shared a fundamental desire to redefine space and presence through visual media. By bridging immersive optics pioneered by Sutton with the portable, dual-mode capabilities of the Mackensteen camera, Paz dos Reis produced images that were both historically significant and sensorially immediate.

His photographs provide a tangible “effect of presence,” placing the viewer amidst the crowd, at the ceremony, or within the intimacy of a domestic ritual. These are not merely passive documents; they function as active instruments of visual immersion. Within this presence resides both their technological accomplishment and their value as cultural heritage.

Paz dos Reis’s panoramic stereoscopic photography represents a pinnacle of early 20th-century experimentation, deeply anchored in a more extensive history of optical innovation and the Victorian fascination with three-dimensional imagery. Comprehending these historical precedents is crucial for understanding the conceptual and technological underpinnings of his media practice. These immersive techniques did not arise in isolation but are rooted in a longstanding lineage of stereoscopic innovation that prefigures the contemporary shift toward virtual and augmented realities.

4. A Short Genealogy: Stereoscopy and the Panorama

To fully comprehend the immersive logic underlying Paz dos Reis’s work, one must situate his practice within the broader historical lineage of stereoscopic technology and human perception. His photographic methods were not isolated experiments; rather, they were intricately linked to a century of optical innovation that commenced in the early 1800s and reached its zenith during the “Golden Age of Stereoscopy.”[17]

The ability to construct three-dimensional, panoramic narratives was the culmination of decades of industrial advancement and a profound shift in public spectatorship. This “pre-history” of immersion—from Wheatstone’s early reflecting stereoscope to the mass-marketed handheld viewers of the Belle Époque—provided the technological and cultural scaffolding upon which Paz dos Reis built his unique visual strategy. Understanding this evolution is essential to recognizing how he transformed a popular entertainment medium into a sophisticated tool for documenting national identity and spatial presence.

The first conceptual breakthrough in three-dimensional imaging occurred in 1838, when Charles Wheatstone presented his research on binocular vision to the Royal College of London. Wheatstone’s reflecting stereoscope employed angled mirrors to project distinct, slightly disparate images to each eye, demonstrating how the brain amalgamates these two-dimensional inputs into a singular perception of depth—a process known as stereopsis. Although his invention preceded the practical advent of photography, it established theoretical groundwork for the subsequent integration of stereoscopic principles into photographic media.

While occasionally misattributed as the sole inventor of the stereoscope, David Brewster was instrumental in its technical refinement and mass-market popularization. In 1849, he unveiled the lenticular (lens-based) stereoscope, which was significantly more portable and user-friendly than Wheatstone’s mirror-based apparatus. Brewster’s collaboration with the French optician Jules Duboscq was pivotal; together, they disseminated stereoscopic daguerreotypes, most notably the renowned image of Queen Victoria showcased at the Great Exhibition of 1851. This

¹² Sutton’s panoramic camera employed a curved plate and hemispherical lens to surmount the narrow-angle constraints of early lenses. In *Photographic Notes* (1859), he characterized this as resolving “the paramount challenge for the tourist photographer”—the incapacity to depict expansive vistas.

¹³ Sutton stated: “The greatest problem for the tourist photographer was the narrow angle of view of the lens [...] Mine includes more than one-third of the horizon.” (*Photographic Notes*, December 15, 1859).

landmark event catalyzed a widespread cultural phenomenon, transforming stereoscopy from a scientific curiosity into a dominant medium of Victorian visual consumption across Europe [17].

The introduction of the wet collodion process in the 1850s revolutionized the medium by facilitating the mass production of stereoscopic images. Pioneering enterprises, such as the London Stereoscopic Company (established in 1854), aggressively marketed the device with the famous slogan “No home without a stereoscope.” This campaign underscored the instrument's widespread cultural significance and its status as a staple of Victorian middle-class leisure. By the 1860s, stereoscopic viewing had evolved into a standardized domestic activity, serving a variety of educational, documentary, and even moralizing purposes.

Between 1857 and 1864, prominent photographers and publishers, such as Furne and Tournier, produced approximately 7,000 stereoscopic cards documenting landscapes, monuments, and social life across Europe. The extensive dissemination of these series likely influenced practitioners like Paz dos Reis, whose own stereoscopic output echoes these earlier international models in both aesthetic style and commercial ambition [17].

Furthermore, nineteenth-century stereographers frequently experimented with motion effects and sequential narratives, creating a conceptual bridge between still photography and the birth of cinema. These early optical experiments indicate that the “cinematic impulse” significantly predated the invention of the Lumière Cinématographe. Such a historical trajectory likely shaped Paz dos Reis’s hybrid sensibility, allowing him to navigate fluidly between the fixed stereoscopic pair and the moving image throughout his multifaceted career.



Figure 16: Antoine Claudet, self-portrait. [18] 1853. This stereoscopic self-portrait, showing Claudet smoking, is considered by Pellerin [17] a pioneering attempt to simulate movement within a still medium.

Stereoscopy has undergone multiple resurgences throughout its history—notably in the 1850s, 1900s, 1930s, 1950s, and the 1980s. Each revival was propelled by specific technological leaps and shifts in visual culture. In the late 19th century, the development of portable wooden stereo cameras, such as those designed by John H. Powell (1858), significantly broadened the medium's accessibility. Furthermore, the transition to dry plates in the 1880s and the introduction of roll film in the 1890s revolutionized photographic production, offering unprecedented convenience and portability [15] for field photographers like Paz dos Reis.

These advancements culminated in the sophisticated compact stereo cameras of the 20th and 21st centuries. Modern iterations, such as Fuji’s W1 and W3 digital models, integrated autostereoscopic displays and specialized printing capabilities, bridging the gap between historical binocular principles and contemporary digital workflows. This technological

continuity affirms the enduring allure of three-dimensional imaging trajectory that spans from Wheatstone's primitive mirror apparatus to the complexities of modern digital 3D and virtual reality environments [19].

By the early 1900s, when Paz dos Reis adopted stereoscopy as his primary medium, he was engaging with a mature and deeply rooted transnational visual tradition. His panoramic stereoscopic compositions were not merely local experiments; they reflected a sophisticated synthesis of optical theories and visual cultures shaped by decades of European scientific innovation, instrument-making, and artistic creation.¹⁴



Figure 17: Horizontal panoramic image. Inauguration of the Lello Bookstore. 1906. Porto, Portugal. This image exemplifies technical precision and compositional elegance, utilizing natural skylight and prolonged exposure to capture the interior's intricate detail. The central staircase directs the viewer's attention upward, while the elegantly attired guests and opulent decor position the bookstore as a symbol of cultural distinction and intellectual ambition. Same source as Fig. 1.

By masterfully utilizing the Mackenstien camera and a visual rhetoric grounded in depth and immersion, Paz dos Reis positioned his work within a prestigious lineage. This trajectory encompasses Wheatstone's foundational optical experiments, Brewster's lenticular refinements, and the subsequent mass distribution of stereoscopic imagery in mid-19th century France and Britain. Ultimately, his practice represents the culmination of this heritage in Portugal, where he successfully adapted a century of global innovation to document and preserve the specificities of Portuguese national identity. Yet this genealogy of immersion is not confined to the stereoscope; it reaches back to the older, monumental tradition of the panorama.

While the relationship between panoramic stereoscopic photography and the 19th-century panorama is not strictly linear, a profound genealogical continuity exists between the two. Both mediums share a unified visual objective: to broaden the viewer's perceptual scope and amplify the subjective "effect of presence." Whether through the grand, immersive architecture of a

¹⁴ Claudet's proto-cinematic sequences, Charles Wheatstone's 1838 discovery of binocular depth, Brewster and Duboscq's lens-based stereoscopes, and Furne & Tournier's thousands of stereoscopic cards are part of this legacy. These European models may have influenced Paz dos Reis' aesthetic and technical choices.

painted rotunda or the optical precision of stereoscopic lenses, these traditions sought to captivate audiences through immersive strategies that were simultaneously aesthetic and ideological.

In this sense, Paz dos Reis's work represents a critical transition in the history of visual media. By miniaturizing the expansive, immersive logic of the panorama into the portable format of the stereoscopic card, he participated in a wider cultural shift toward personal, yet high-fidelity, immersive experiences. This convergence of panoramic breadth and stereoscopic depth prefigures the development of modern wide-angle and 360-degree imaging, situating his practice at the intersection of late-Victorian spectacle and the precursors of contemporary virtual environments.

The panorama, conceived by Robert Barker in 1787, presented 360-degree painted vistas displayed within purpose-built circular structures. These rotundas positioned the observer at the core of a continuous, immersive image—frequently augmented by three-dimensional architectural elements (*faux terrains*) and controlled atmospheric illumination. According to Oettermann [20], panoramas constituted the inaugural mass visual medium capable of generating entirely immersive experiences. By synthesizing painting, architecture, and sophisticated exhibition techniques, they sought to evoke wonder, often in support of nationalist, imperial, or scientific narratives.

Panoramic stereoscopic photography emerged a century later, translating these immersive aspirations into a compact and portable format. Rather than relying on architectural scale, this medium utilized binocular depth and photographic realism to elicit the “effect of presence.” This more intimate and accessible mode of visual immersion continued to rely on analogous perceptual principles—emphasizing spatial extension, emotional resonance, and the embodied engagement of the spectator.

In diverse national contexts,¹⁵ panoramas fulfilled distinct ideological and educational purposes. Collectively, these historical instances demonstrate that the panorama tradition served not merely as a public spectacle but as a powerful vehicle for ideological development and cultural education, a legacy that Paz dos Reis successfully adapted to the private, domestic sphere through his stereoscopic production.

Oliver Grau [21] posits that the 19th-century panorama serves as a direct precursor to modern virtual reality.¹⁶ It elicited emotional reactions and ideological conformity through immersive techniques designed to dissolve the boundaries between the observer and the fabricated reality. This emotive reasoning—anchored in the dual power of spectacle and immersion—is echoed in the stereoscopic photographs of Paz dos Reis, particularly those depicting crowds, state ceremonies, or pivotal political occurrences. These images do more than document; they generate a sense of engagement where viewers are encouraged to experience the event rather than merely observe it.

Jonathan Crary [22] contextualizes the panorama within a wider 19th-century transformation in visibility—a shift from classical models of perception to physiological modes aligned with modern optical media. He contends that the panorama offered a uniform visual landscape in which the observer experienced a paradoxical combination of autonomy and

¹⁵ British panoramic displays depicted urban landscapes, historical battles, and British Empire scenes, organizing urban vision and reinforcing national identity. They promoted state propaganda and civic education in France by celebrating Napoleonic victories, heroism, and patriotism. German panoramas combined beauty and education by depicting natural landscapes, archaeology, and science. To unite its multiethnic population, Austria emphasized imperial cities and military victories. In the US, panoramic views of the Mississippi River, Civil War, and Western frontier entertained and promoted nationalism and territorial expansion.

¹⁶ Grau (2003) calls the panorama “the highest developed form of illusionism and suggestive power before the digital,” inducing awe and ideological alignment through perception. His *Panorama of the Battle of Sedan* analysis shows how immersive media affects emotions and politics.

disembodiment, a phenomenon further enhanced by rigorous architectural and optical arrangements.

Stereoscopy, despite its more contained physical scope, expanded this visual rationale. By isolating the viewer's gaze and organizing attention through immersive framing, it reconfigured subjectivity. In this regard, and following Crary's account of how nineteenth-century optical devices reorganised the observer [22], the stereoscope functioned not merely as a tool for entertainment or education but as a kind of “disciplinary mechanism”—an apparatus that regulated attention, isolated the gaze, and thereby helped to shape modern perceptual habits. For Paz dos Reis, this meant that his stereo cards were not just records of the past, but sophisticated devices that trained the Portuguese public to see and feel the “modernity” of their nation through a structured, three-dimensional gaze.

This immersive vision model has regained profound significance in contemporary media. The panoramic and stereoscopic formats have been revitalized through virtual reconstructions of historical sites, immersive museum installations, and digital simulations that replicate the 19th-century aspiration for “comprehensive visual environments.” Modern iterations of the panorama—whether through 360-degree projections, head-mounted displays (HMDs), or sophisticated VR headsets—continue to captivate audiences by replicating the original efficacy of Paz dos Reis's era: creating a sense of presence, meticulously directing attention, and altering the user's spatial perception of reality.



Figure 18: Panorama of the Monumental Grandeur of the Mississippi Valley. John J. Egan. 90 in. x 348 ft. (228.6 x 10607.1 cm). USA. c. 1850. [23]¹⁷

¹⁷ At first glance, Panorama of the Monumental Grandeur of the Mississippi Valley appears to be a single large painting of the Mississippi and Ohio River valleys. Yet, concealed behind its frame are 24 additional scenes on a long strip of fabric attached to two vertical rollers that, if completely unrolled, would occupy 2,668 square feet! John J. Egan, American (born Ireland), active mid-19th century.



Figure 19: Innsbruck's Tirol Panorama Museum grand entrance. Photograph by the author, November 2024. Austria. This museum houses the Innsbrucker Riesenrundgemälde, a 360-degree painting by Michael Zeno Diemer [24] depicting the 1809 Battle of Bergisel. The immersive circular installation functions as a historical reconstruction and a medium for collective memory, exploring Tyrolean identity, religion, and regional pride.



Figure 20: Visitors experiencing the “Panorama of Congo: Unrolling the Past with Virtual Reality” exhibition. Curated by A. D. Mendes, L. Engelen, L. King, and V. Flores. National Museum of Natural History and Science (MUHNAC), Lisbon [25]. Photograph by the author, February 2024. ¹⁸

These contemporary technologies represent a “remediation” of the very principles that Paz dos Reis explored with his Mackenstein camera. By concentrating the viewer’s gaze and isolating it from the physical surroundings, modern immersive media fulfill the disciplinary and

¹⁸ The Panorama of Congo, initially designed to showcase Belgium's colonial successes, offers an idealized representation of the Congo while obscuring the violence of its history. Previously stored in museum reserves, it is now reevaluated as a significant colonial artifact. The CONGO-VR project (FilmEU RIT) digitally reconstructs the panorama through Virtual Reality, integrating historical research and artistic intervention to promote discourse on colonial memory. The exhibition, hosted by MUHNAC–ULISBOA, showcases works by Congolese diaspora artists and is part of wider initiatives to examine heritage and decolonial narratives.

emotional potential inherent in early stereoscopic practice. Thus, the work of Paz dos Reis is not merely a relic of Portuguese photographic history; it is a vital precursor to the digital architectures of immersion that define our current visual culture, bridging the gap between the analog “effect of presence” and the virtual “telepresence” of the 21st century.

By situating Aurélio da Paz dos Reis’s panoramic stereoscopic photographs within this extensive visual lineage, we can more effectively comprehend how his imagery adapted immersive techniques for novel technological and cultural contexts. His work does not merely document external reality; it reinterprets it as an accessible, ideologically significant experience.

This shift—from monumental spectacle to portable immersion—illustrates a critical historical convergence between 19th-century panoramas and early 20th-century stereoscopic photography. While massive rotundas housed 360-degree painted vistas designed for collective viewing, stereoscopic photographs offered a private, yet equally compelling, immersive encounter. Using binocular disparity and photographic realism, stereoscopy recreated the sensation of depth on a miniature scale, aligning with the spatial logics of immersion identified by Oettermann and Grau. [20][21]

In this context, Paz dos Reis emerges as both a documentarian and a sophisticated visual strategist. He successfully converted the expansive perceptual aspirations of the 19th century into portable, high-fidelity media experiences, prefiguring the individualized immersive consumption that defines our contemporary digital landscape.

5. Conclusion: The Historical Legacy of Paz dos Reis

Aurélio da Paz dos Reis occupies a singular position in the history of early Portuguese visual media. His multifaceted contributions to cinema, stereoscopy, and photojournalism exemplify a unified vision where technological innovation intersects with civic responsibility. Through his mastery of the Mackenstien camera and his commitment to both stereoscopic and panoramic formats, he created perceptual experiences that were simultaneously intimate, immersive, and historically significant.

Among his vast output, the portrait of Hilda Ophelia (1908) stands out for its symbolic and conceptual richness. By staging his daughter amidst carefully selected props, Paz dos Reis converted a private family portrait into a dialectical representation where national history and staged intimacy intersect. This specific image serves as the conceptual cornerstone for an upcoming historical documentary that revitalizes his archive through the lens of media archaeology. This project aims to reframe early stereoscopic media not as dead relics, but as “time capsules” that continue to evoke emotion and provoke historical reinterpretation.¹⁹

The restoration of this corpus transcends mere archival preservation; it asserts that early immersive media effectively prefigure digital visuality. The principles of presence and memory are deeply ingrained in both analog and digital cultures, and the legacy of Paz dos Reis provides a vital framework for reevaluating the interconnection between vision, technology, and cultural memory in contemporary Portugal.

Housed in institutions such as the Cinemateca Portuguesa [27] and the Centro Português de Fotografia (CPF) [3], his collection remains one of the most significant stereoscopic archives in Europe. It continues to influence curatorial methodologies and academic inquiry, proving that his “effect of presence” remains a potent force in understanding the politics of image creation. Ultimately, Paz dos Reis was more than a pioneer of the moving image; he was a visionary

¹⁹ The composition includes a camellia (Republican symbol), a globe, Masonic literature, Port wine bottles, a clock, and a calendar marked 1 January. This constellation of props echoes Walter Benjamin’s theory of the dialectical image[26], in which objects condense temporal and ideological meanings beyond literal representation (Benjamin, 1935).

strategist of the gaze, whose work bridges the gap between the mechanical wonders of the 19th century and the virtual horizons of the 21st.



Figure 21: Vertical panoramic image. Hilda Ophélia da Paz dos Reis. 1908/1909. Porto, Portugal. Same source as Fig. 1.

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7. Declaration on Generative AI

During the preparation of this work, the author used a generative AI assistant in order to support language editing, proofreading, and the consistent formatting of references and captions. After using this tool, the author reviewed and edited the content as needed and takes full responsibility for the content of the publication.

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