

Study on Spatial Perception in Modern European Art in the Context of 19th-Century Visual Culture

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Abstract: This paper investigates spatial perception in contemporary European art in the context of nineteenth-century visual culture. Rather than presenting new empirical data, it compiles historical and theoretical studies on the construction of the observer, optical devices and pictorial practices to show how new regimes of vision shaped artistic space. The discussion will show how the observed subject changes under the influence of optical devices and physiological optics, focus on the development path of models such as the camera obscura to stereoscopy and panoramacy, and investigate how modern European artists, especially those in the French school, have adapted to these changes through painting techniques that manipulate depth, focus of attention, and the position of the subject. Based on the social and political history of nineteenth-century art, it examines how urban life, mass visual media, and realist-impressionist techniques changed the concept of spatial continuity and fragmentation. It believes that the idea of space in contemporary European art should no longer be viewed as an extension of representation, but rather as an integral part of the larger visual culture of spectacle, surveillance and daily observation.

Keywords: Spatial perception, modern European art, nineteenth-century visual culture, observer, optical devices, realist painting.

1. Introduction

In the 19th century, people in Europe began to think about and live in space differently. Industrialisation, urbanisation and new optical devices changed people's perception of life, and modern art practices responded to and participated in these changes. Spatial perception in painting and other visual media was not merely the result of technical progress in perspective, but also part of a wider rearrangement of visual culture.

Traditional art-historical narratives have often shown modern European art as a linear development from the Renaissance perspective to fragmented, subjective spaces. However, studies of visual culture have shown that changes in pictorial space are linked to alterations in how the observer is constructed, the emergence of mass visual media, and new forms of attention and distraction. In this context, nineteenth-century spatial perception can be viewed as a particular system of embodied observation, optical technology and cultural discourse.

This paper introduces a concept study of space perception in modern European art under the conditions of nineteenth-century visual culture. It is based on the previous research and does not provide new empirical data; instead, it connects the analyses of observers, devices and pictorial strategies to offer an all-encompassing view of how space was perceived and represented at that time.

2. The Observer and 19th-Century Visual Culture

Jonathan Crary's research on nineteenth-century visual culture shows that the observer is a historical product formed by discursive, technological and institutional forces [1][2]. According to the method of observation, by the 1820s, vision was beginning to be regarded as a physiological phenomenon in the body rather than a fixed image of the external world [1]. Optical devices, such as the stereoscope and phenakistoscope,

were developed by empirically studying retinal afterimages and binocular vision, and they took over the role of observation from the camera obscura [1][2].

Suspensions of Perception extends this analysis to the late nineteenth-century regimes of attention and spectacle, arguing that modern culture involved both shock and new norms of attentiveness [2]. Observers were assumed to be permeable and easily distracted, so the visual environment was organised to control and attract their attention [2]. Based on the above analysis, the space of modern art should be viewed as a site for competing demands on the viewer's attention, such as scientific instruments, mass-media displays and urban spectacles.

Crary's idea of the "relentless abstraction of the visual" suggests that, moving away from the traditional view of vision as linked to fixed space, a system of stimuli and sensations that did not require a stable location was formed [1]. Therefore, pictorial space should not be regarded as a neutral container; instead, it is intertwined with practices and apparatuses that construct the observer as both calculable and subject to control. Spatial perception in contemporary European art stems from this reconstructed visual culture, and sight is mediated by devices and shaped by social power structures.

3. Optical Devices, Depth and the Reorganisation of Space

Optical Devices provided the foundation for nineteenth-century visual culture and offered new ways of creating and experiencing space. Stereoscopes, panoramas and moving panoramas have all created immersive environments for observers to experience depth and space through mechanical and optical means [1, 11]. Oettermann's history of the panorama shows how circular and linear panoramas used images that combined perspective with narrative sequences to surround viewers, creating a form of entertainment and education through space [11].

A stereoscope creates an illusion of three dimensions by showing slightly different pictures to each eye and uses physiological optics rather than geometric projection [1][7]. Crary thinks that the spread of stereoscopic devices indicates a new system in which "realism" is based on abstract models of vision and quantified bodily responses rather than on mimetic perspective alone [1]. The Kaiserpanorama and other devices organised multiple viewers to sit at viewing stations and have individual yet shared experiences of spatialised pictures [11].

Martin Kemp's *The Science of Art* has traced optical themes in Western art from Brunelleschi to Seurat, showing how artists have used scientific knowledge of light, colour and vision [7]. At the same time, in the 19th century, there were also developments in optical instruments and theories that contradicted the earlier concept of continuous, uniform space. Space perception has been increasingly mediated by instruments that segment, repeat and animate views, and thus a culture has arisen where depth and continuity are experienced through sequences and effects rather than a single, stable vista [1][7][11].

4. Beholder, Absorption and Theatricality

Michael Fried's study of eighteenth-century painting and beholding offers a reference for the research on nineteenth-century space perception. Fried distinguishes between paintings that stage figures absorbed in their own world and indifferent to the viewer, and those that acknowledge and address the beholder directly in Absorption and Theatricality [4]. Absorptive paintings aim to create a space where viewers feel they are observing subjects unaware of being observed, and theatrical works focus on the act of viewing and the presence of the audience [4].

Fried's research on the age of Diderot offers a system of concepts for changes in space during the 19th century. With the proliferation of spectacles and mass media in visual culture, the space for painting could no longer be regarded as a private place of absorption. Realist and modernist artists increasingly acknowledged the conditions of viewing in urban areas, where images competed with other attractions and observers navigated crowded, noisy environments [5][6]. This change in structure of pictorial space often made the viewer feel less stable and more self-aware.

Within nineteenth-century visual culture, the beholder is part of publics configured by museums, salons, illustrated press and panoramic displays [2][11]. Therefore, spatial perception in contemporary European art should also consider how paintings and prints position the viewer in relation to spaces that are both shown and suggested, such as galleries and boulevards where images are viewed. Fried's categories of absorption and theatricality can be reinterpreted in this context to explore how modern works address attention, distraction and the social visibility of viewing practices [2][4].

5. Spatial Perception in French Realism and Modern Life

Studies of French Realism and Modernity have explored how painters responded to new social and spatial conditions in nineteenth-century Paris. T. J. Clark's *The Absolute Bourgeois* and *The Painting of Modern Life* place artists such as Courbet and Manet within political and urban changes, and show how their works record class conflict, commodity

culture and alterations in public space [5][6]. The space in these paintings is closely related to social relationships, crowding and the organisation of visibility.

Realist painting rejected idealised, hierarchical space and depicted daily life with a shallow depth of field, cropping and oblique angles. Courbet's large canvases often present viewers with dense arrangements of figures and objects that are difficult to organise in space, so the observer must face ambiguity and discontinuity [5]. Manet's modern life paintings use reflections, mirrors and overlapping planes to make the viewer feel uneasy and break away from traditional perspective [6]. The above strategies can be seen as responses to an urban environment where space is experienced as fragmented, contingent and mediated by new visual technologies.

Linda Nochlin's study of realism shows that the space of realism is not a copy of photographs but a critical investigation into visibility and social reality [8]. Spaces of daily life, such as cafes, streets and offices, both reveal and conceal power relations, thus becoming sites of ideological conflict [5, 8]. Realist painting in nineteenth-century visual culture thus participates in the broader discussion of what should be shown, how depth and closeness are organised, and who takes the centre or the periphery of shared spaces.

6. Impressionism, Attention and the Fragmented Field of Vision

Impressionist and post-Impressionist painters further shifted the conception of space by presenting time and change in vision. Crary and others believe that these movements should be viewed not as individual formal changes but as part of a larger restructuring of attention and perception in contemporary society [2, 7]. Brushwork, colour and composition in Impressionist works often suggest fleeting moments and changing perspectives rather than stable, unified spaces.

T. J. Clark studied Manet and his followers to show that the Impressionists' depictions of leisure, transport and entertainment spaces reflect the rhythm of urban life, including rapid movement, crowding and the proliferation of images [6]. Spatial perception in these works is often organised by diagonals, reflections and overlapping planes to create a sense of movement and observation by a mobile viewer [6]. Such pictorial strategies can be related to the experience of panoramas, stereoscopic images and photographic series that trained viewers to process sequences of spatial information.

Crary's *Suspensions of Perception* proposes that late nineteenth-century culture included both distractions and new norms for attention, and visual environments were designed to attract and retain the gaze [2]. Impressionist and Modernist paintings can be seen as attempts to solve this problem by creating fragmented and concentrated spaces. Direct a viewer's attention to various areas or situations by having them move their eyes over the surface of a brushstroke and a contrast in colour. Spatial perception is an active process of organising partial cues into a temporary whole, and observers experience other mass visual contexts in the same way [2][6][7].

7. Scientific Optics, Perception and Pictorial Space

Scientific developments in optics and psychology

contributed to the nineteenth-century discussion of vision and space. Martin Kemp's research on optical themes in Western art shows how artists have used theories of colour contrast, retinal afterimages and binocular vision [7]. Experiments in physiological optics have moved from external geometric constructions to internal processes of perception and now suggest that space is experienced through the body's reaction to stimuli [1][7].

E. H. Gombrich's *Art and Illusion* combines psychological studies of perception with art history to propose that pictorial representation involves learned "schemata" and corrections rather than direct reproduction of nature [10]. Although Gombrich's works cover all periods, they all explore the psychology of representation and how observers construct spatial coherence from partial cues in the nineteenth century. Optical devices and images in mass visual culture intentionally use such construction processes to create a sense of depth and motion through the viewer's perceptual habits [1][11].

Although Svetlana Alpers' *Art of Describing* focuses on Dutch art, it also put forward an influential idea that painting is a descriptive rather than a narrative activity and stressed the mapping of visual fields over time [9]. The ideas can also be applied to nineteenth-century European visual culture, and the perception of space often involves scanning surfaces and comparing zones of detail rather than constructing linear perspective. Scientific and theoretical studies in optics and perception have thus intersected with artistic experiments on representing space as a field of information for exploration by the observer.

Together, these contributions show that spatial perception in contemporary European art has been changed by changes in the concept of visual physiology and cognition. Artists and viewers are increasingly aware that spaces are shaped by the body and culture, and thus pictorial space has become a site where scientific knowledge meets everyday life [1][7][10].

8. Mass Visual Media, Tourism and Everyday Spatial Experience

Mass visual media in the 19th century, such as illustrated newspapers, photography, panoramas and stereoscopic pictures, also shaped people's daily life in space. Oettermann's history of the panorama shows how panoramic displays gave audiences all-encompassing views of battles, landscapes and cityscapes, collapsing distance and reorganising space [11]. These devices invited observers to take a high vantage point and view the constructed world.

Photography and stereoscopic images have been widely used as souvenirs and educational materials to create a culture of experiencing distant places through visual proxies [1, 11]. Tourism is increasingly conveyed through images that anticipate and shape travellers' expectations, and railway travel has added a new type of experience of motion and altered perspectives [11]. Space perception has been combined with commodified views and scripted itineraries, thereby changing the perception and memory of urban and rural areas.

In light of the mass visuals, modern European art both competed with and critiqued popular culture. Realist and Impressionist painters sometimes used panoramic or stereoscopic subjects, but at other times they focused on the limits and distortions of such mediated visions [5-6, 8]. Thus, the space in their works can be viewed as an intervention in

everyday vision that draws attention to parts of space that mass media have either sensationalised or ignored. Therefore, the artistic space is not independent but is also part of a larger economy for attention and space.

Given the impact of mass visual media and tourism, it should be avoided to view modern pictorial space solely through the lens of art-historical style. Spatial perception is, in fact, a part of the wider discussion on how environments are visualised, navigated and consumed in nineteenth-century Europe [1][11].

9. Interpretive Principles and Limitations of This Study

This paper has proposed a conceptual system for studying space perception in contemporary European art through 19th-century visual culture. Based on the work of observers, optical devices, painting and perception, it is proposed that spatial perception should be understood as historically constructed through apparatuses, discourses and practices [1][3][7][10]. Rather than presenting a single path from the Renaissance to modern fragmentation, the system shows overlapping regimes of space and vision.

This paper has certain deficiencies. It does not provide new empirical data or case studies, and only proposes conceptual connections based on existing research. Many specific questions—such as differences among national traditions, the role of gender or class in spatial perception, or non-pictorial media—require further research. Given the above deficiencies, we should not overstate the explanatory power of the current system and avoid making claims that exceed what has been supported by the cited literature.

By foregrounding both principles and constraints, the study hopes to provide support for careful, historically grounded analyses of spatial perception in modern European art that remain sensitive to the complexity of nineteenth-century visual culture.

10. Summary

In the context of nineteenth-century visual culture, spatial perception in modern European art is the result of changes in the concept of the observer, new optical devices and evolving pictorial practices. Vision is no longer seen as an unobstructed window to a fixed, perspective-based world but is understood to be shaped by tools, the body and society.

Modern European artists have responded to these changes by altering the idea of depth, attention and the position of the viewer, exploring compressed, fragmented and contingent spaces that reflect urban life and mass visual culture. Their works participate in the wider discussion of visibility, reality and the organisation of daily life, and make space perception an important subject for studying modernity.

Based on the previous studies, this paper will explore how spatial perception has been studied in nineteenth-century visual culture without collecting new data. In the future, some artists, media and other contexts can be selected for in-depth studies. At present, the main implication is that any study of modern European spatial perception should pay attention not only to formal techniques but also to the historically particular regimes of vision in which these techniques were developed and applied.

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