

# “Luminous Conflicts: Navigating Architecture, Light, and Visitor Experience in Museums”: The Case of Yale Center for British Art

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**Abstract:** The architectural design of the YCBA (Yale Center for British Art) exemplifies Kahn’s exploration of light as a transformative element. However, preserving sensitive materials within the museum challenges the building’s original intent. The potential harm caused by light necessitates control measures, potentially compromising the intended luminous ambience envisioned by Kahn. A comprehensive survey revealed a strong preference for natural light in the museum environment. Visitors appreciated the ethereal qualities and heightened engagement with exhibits facilitated by natural light. This research critically examines the balance between architectural vision, preservation imperatives, and visitor expectations, highlighting the museum space as a dynamic field of action. The architectural elements, interior configuration, lighting, and movement are in constant harmony and conflict. This investigation contributes to a deeper understanding of the relationship between architecture, light, the museum experience, and knowledge. It underscores the importance of considering preservation, design, and visitor preferences when balancing these elements in museums.

**Key words:** Architecture, light, visitors, museum experience.

## 1. Introduction

This study investigates the intricate relationship between architecture and light and its profound influence on the overall museum experience. Focusing on the YCBA (Yale Center for British Art) as a case study, designed by renowned architect Louis Kahn with a philosophical approach research delves into the conflict that arises when balancing the original vision of the building, the imperative of preservation, and the desires of visitors. The study particularly examines the tension between Kahn’s intentional manipulation. The museum architecture in the 20th century bears witness to an evolving relationship between form and function, aesthetics and conservation, and the interplay of light as both an artistic medium and a preservation challenge. Iconic architectural designs of this era have not only redefined

the visual language of museums but have also presented complex conflicts that demand comprehensive exploration. Within their hallowed halls, they strive to harmonize the intricate interplay between architectural design, curation, preservation imperatives, and the diverse expectations of their visitors. This multifaceted relationship has been the subject of profound inquiry, with scholars and practitioners delving into the nuanced dimensions of museum environments [1]. Amidst the rich tapestry of museum discourse, one thread has remained resilient and persistent—the conflict.

Conflict within museums extends beyond discord; it is a delicate equilibrium requiring skillful management of interconnected forces. Architects desire well-lit spaces, curators craft narratives, educators impart knowledge, and visitors seek immersive experiences. These intersecting interests generate tensions in museum environments.

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Within this complex world, the challenge is transforming conflicts to enhance the contemporary museum experience while preserving culture and art.

Our investigation finds its locus in the iconic YCBA, an architectural masterpiece conceived by the visionary Louis Kahn. This building’s philosophical underpinnings and meticulous design illuminate the potential of light as a transformative element within the museum environment [2]. Our effort aspires to synthesize a harmonious resolution—an untangling of the conflicts that bind museums. We envision museums not merely as spaces where conflicts are managed but as catalysts for enriched visitor experiences, profound knowledge, and a deeper understanding of culture and art. Through rigorous analysis and insightful inquiry, we aim to illuminate the path toward a more comprehensive understanding of this captivating symbiosis.

### *1.1 Museum Architecture and Light*

This research critically examines the tensions and complexities surrounding the delicate balance between architectural vision, preservation imperatives, and visitor expectations, and highlights the museum space as a dynamic field of action. The architectural elements, the configuration of the interior, the lighting, and the movement are all elements in harmony and constant conflict. This investigation contributes to a deeper understanding of the intricate relationship between architecture, light, the museum experience, and finally

knowledge. It underscores the importance of considering the multifaceted perspectives of preservation, architectural design, and visitor preferences when navigating the delicate balance between these elements in museums. To gauge visitor preferences, a comprehensive survey was conducted, revealing a strong inclination toward the presence of natural light in the museum environment. Visitors expressed a profound appreciation for the ethereal qualities and heightened engagement with the exhibits facilitated by the interplay of natural light within the space.

Museum architecture has undergone profound changes in the 20th century, redefining how spaces influence visitors’ experiences [3]. This transformation also relates to how architects use lighting in museums. Scholars like Mieke Bal, in “Exhibition as Film”, explore how light plays a crucial role in creating dynamic and cinematic exhibition environments. Bal identifies space, visitors, time, and light as key tools in crafting the architectural and scenic experience [4].

Lighting is crucial in shaping the visitor’s experience in museums. The evolution of museum architecture, exemplified in works like “Museum Architecture: A Brief History” and “Architecture is the Museum” by Giebelhausen [5, 6], has shifted from classical standards to more adaptable and technologically advanced concepts. Features like transparent ceilings and large windows have become prominent, transforming the interior space and creating a deep connection between space and experience [7].



**Fig. 1** Drawing by Louis Kahn reveals the meticulous control of light management, placement of artworks, and the pursuit of an ideal visitor experience (University of Pennsylvania and the Pennsylvania Historical and Museum Commission). Housed in the Harvey and Irwin Kroiz Gallery, the resources of the Kahn Collection are used with the permission of the Architectural Archives, University of Pennsylvania (hereafter cited as Kahn Collection, AAUP).

The importance of lighting in museums is highlighted in any comprehensive analysis of space, art, and architecture, lighting consistently emerges as a vital consideration [8]. This emphasizes that you cannot fully evaluate museum architecture, exhibitions, spatial arrangements, or object presentation without considering lighting [9]. It underscores how integral lighting is shaping museum architecture and the overall experience.

### *1.2 Light, Preservation, and Curation*

The existing body of literature on museum lighting primarily focuses on its role in preserving exhibits. Objects within a museum’s collection are fundamental elements, and how they are presented significantly influences visitor engagement. Earlier studies viewed light, often associated with heat, as potentially destructive [10, 11]. However, contemporary research broadens this perspective, aiming to connect art preservation with the visitor’s experience. In their 2007 study, “Museum Lighting: Its Past and Future Development”, Druzik and Eshoj [12] trace the evolution of museum lighting, considering both preservation and presentation. They emphasize the challenge of managing light in museums because it is the most visible aspect to viewers, impacting not only objects but also the viewing conditions [12].

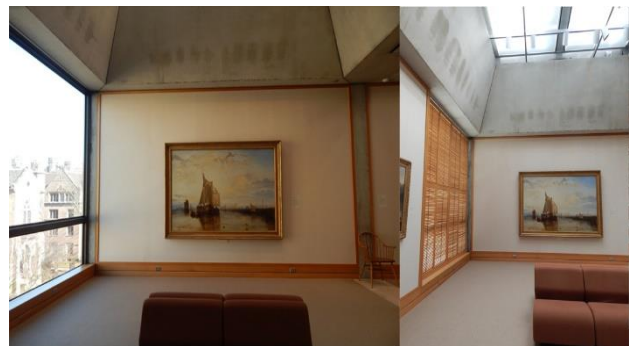
The concept of lighting has evolved to facilitate collaboration between curators and conservators. This collaboration seeks not only to ensure safer lighting but also to create an atmospheric setting for showcasing artworks. This approach allows for a balanced consideration of the preferences of artists and curators, guided by the expectations of the viewing public [13].

Museums and exhibitions serve as frameworks for communicating with visitors, shaping the significance of material culture in human history [14]. Current research delves into the intricate relationship between lighting, conservation, curation, and the visitor

experience. The design of lighting, as part of the orchestrated encounter between visitors and objects, contributes to the interpretation and knowledge-building process [15].



**Fig. 2** William B. Carter, 03/01/1975, YCBA, Paul Mellon (far left) and Jules Prown (second from left) looking at one of the skylights (MS 1345, Manuscripts and Archives, Yale University Library, copyright, Yale University).



**Fig. 3** The directed encounter of the viewer with the work of art. The sense of light and the visual perception of the space and the artwork with and without natural light (photo by the author, copyright: Yale University).

This evolving understanding empowers museum professionals to develop lighting strategies that not only protect valuable artifacts but also create captivating and artistically faithful exhibitions, ultimately enriching the visitor’s museum journey [16]. As we delve into the influence of lighting on museum environments, it becomes evident that architectural design choices and preservation concerns are intricately entwined with the lighting decisions made within these spaces. To better understand the philosophical underpinnings behind such decisions and their transformative potential, we turn our attention to the architectural philosophy of Louis Kahn, whose visionary approach to light sheds light on the conflicts and harmonies we explore in the subsequent section.

## **2. YCBA and Louis Kahn Architectural Philosophy**

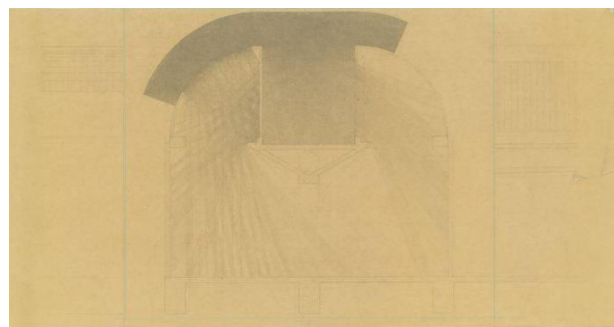
Louis Kahn (1901-1974) left an indelible mark on the world of architecture, with his masterpiece, the YCBA 1977, standing as a testament to his profound significance in the field. Acknowledged by art historian/architectural critic Vincent Scully as a harbinger of modernity and a beacon in the evolution of contemporary architecture [17] the YCBA played a pivotal role in perpetuating the modernist movement [18].

While our introduction lays the groundwork for exploring conflicts within museum architecture, it is essential to illuminate how Louis Kahn’s architectural philosophy directly contributes to these conflicts. Kahn’s design principles are deeply rooted in the belief that form emerges not solely from structural necessities but from the inherent will of the building itself. It is from this formless essence that the tangible, concrete built environment takes shape [17], establishing a direct link between the structural elements of the building and the embodied experience of its occupants (Fig. 1).

Kahn’s conviction that materials and light possess an inherent longing for self-expression elevates architecture beyond mere functionality to inspirational grandeur (Fig. 2) [19]. This perspective directly correlates with the conflicts we mentioned earlier, particularly the tension between an architect’s vision and the imperative of preservation and curation. Kahn’s approach to architectural form, where every design element contains an intrinsic desire to manifest its true nature, mirrors the conflict within museums. Here, curators strive to convey nuanced narratives while preserving delicate artworks. Just as Kahn’s designs at YCBA aim to candidly reveal the structure and purpose of the building, curators aim to communicate the essence of artworks without compromising their integrity. This intersection of desires and aspirations is at the heart of the conflicts museums face.



**Fig. 4 Drawing from Louis Kahn, emphasizing the surface of the building. This drawing reveals the detailed study of light, form, and materiality of the structure (Louis Kahn collection, AAUP).**



**Fig. 5 Drawing originating from the office of Louis Kahn and his collaborators. Evident within this plan is meticulous attention to detail in the management and rendering of light, manifested through the intricately sensitive design lines. The geometric form of the building converges harmoniously with the poetic essence of light (Louis Kahn Collection, AAUP).**



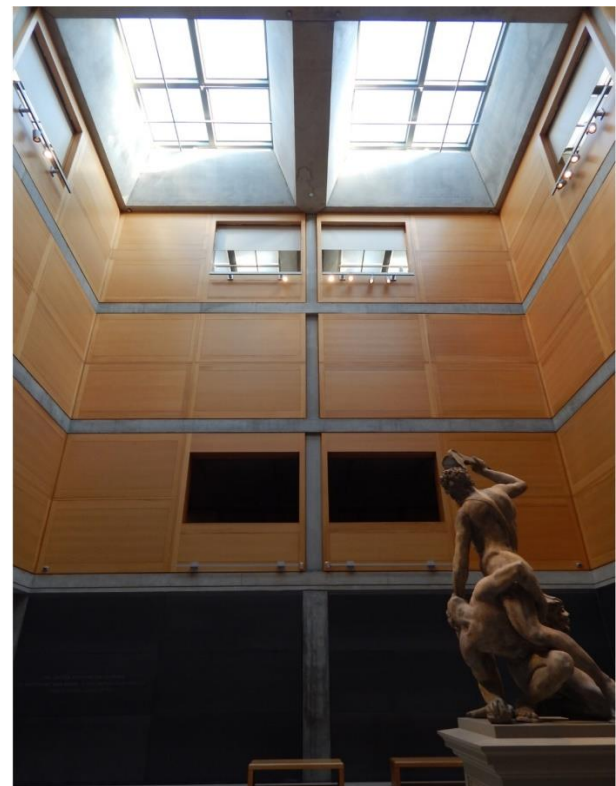
Furthermore, Kahn’s emphasis on the interplay between natural light and architecture underscores the conflict related to lighting in museums (Fig. 3). His belief that space becomes meaningful when bathed in natural light aligns with the desire for well-lit exhibition spaces [2]. However, the need to protect artifacts from potential harm caused by light introduces a complex tension. Kahn’s writings reveal the profound significance he ascribes to the interplay between buildings and light, deeply rooted in an anthropocentric perspective extending beyond the confines of interior spaces to encompass the entire structure (Fig. 4). According to his thoughts, architecture bears a societal responsibility to shape the human experience [17]. This endeavor finds its origins in the recognition of space as an existential realm, which Kahn believes becomes meaningful when bathed in natural light.

For instance, at YCBA natural light permeates almost every space, but especially on the unique 4th floor (Fig. 5). The pyramidal skylights are followed by the dynamic volume of the concrete base, which contrasts with the linen, the wood, and the carpet covering the floor. If the room is the beginning of architecture <sup>1</sup> as Kahn used to say, the room’s configuration at the YCBA represents a new beginning in shaping the museum type and aesthetic experience (Fig. 6). Space, light, materials, structure, and construction are qualities that, through the design process, are synchronously realized in the form of the building [20]. Kahn’s structure acts as a modulator of light, positioning the reality of design within the mystical dimension of natural light, where design and lighting mutually shape the structural process.

Louis Kahn’s architectural philosophy, with its focus on the inherent desires of materials and light, directly contributes to the conflicts we explore in this paper. It highlights the delicate balance museums must strike between architectural vision, preservation imperatives, and visitor expectations, shedding light on the intricate

relationship between architecture, light, the museum experience, and knowledge. Within this framework, architecture becomes the union of two dimensions of existence: the immeasurable inner realm of the soul and the measurable outer realm of the phenomenal world [21]. Here, the concept of the soul extends beyond living beings to encompass all entities, including objects and buildings, that possess a desire to express themselves through specific forms.

Thus, light itself seeks to manifest through particular forms, with form becoming the embodiment of light’s design, uniting the immeasurable and the measurable within the constructed edifice (Fig. 7). Consequently, the building becomes an aesthetic experience and a lived architecture, harmoniously coexisting with its users [3, 22]. The designed form



**Fig. 6** YCBA, the entrance courtyard, and the lighting system are evident as well as the tactility offered to the structural materials, as well as the lighting choice for the sculpture, shape the visitor’s reception environment (Photo by the author, copyright: Yale University).

<sup>1</sup> Louis Isadore Kahn Collection (MS1345). Manuscripts and Archives, Yale University Library. Accessed February 16, 2023. <https://archives.yale.edu/repositories/12/resources/3648>.



**Fig. 7** YCBA, the harmonious synthesis between materials, light, structure and purpose. The illumination of the 4th floor, long gallery (Photo by the author, copyright: Yale University).

should ultimately encompass all the symbolic and psychological ideas intrinsic to the building's essence.

### 2.1 Visitor's Perspective

To comprehensively explore the impact of lighting on the museum experience and gain valuable insights

into visitor preferences, we conducted a structured survey based on a systematic research review [23, 24]. The aim of this survey, conducted with 111 participants who visited the YCBA, was to understand how lighting influences the engagement and perceptions of the museum's audience. The survey comprised 15 questions, with 43 variables, and was conducted from February 21 to February 25, 2023, coinciding with the YCBA's closing days before a scheduled lighting renovation.

In the initial analysis of the survey data, our primary focus was on investigating the interconnections among key variables, particularly the comprehension of museum layouts and the significance of light concerning communication, knowledge, emotion, and perception (Table 1). During this analysis, we discovered significant correlations between light and emotions, as well as between the importance of communication and the significance of knowledge. These correlations were statistically substantial, signifying meaningful relationships. In particular, the findings point to the influence of lighting conditions on the emotional experiences of museum visitors. At the same time, it was clear that visitors prefer natural light. Moreover, those who emphasize the importance of lighting for communication purposes also tend to value lighting for its role in enriching their knowledge during their museum visit.

**Table 1** Correlations chart, we explore the dialogue between, attention to light, emotion, knowledge, movement, and communication (This outcome is by SPSS (Statistical Package for the Social Sciences) and refers to five different variables).

		Correlations				
		Importance in communication	Light and emotion	Importance in knowledge	Attention to light	Light effect of movement
Importance in communication	Pearson correlation	1	0.099	0.508**	0.243*	0.046
	Sig. (2-tailed)		0.038	< 0.001	0.010	0.632
	N	111	109	111	110	110
Light and emotion	Pearson correlation	0.099	1	0.124	0.253**	0.296**
	Sig. (2-tailed)	0.308		0.198	0.008	0.002
	N	109	109	109	108	109
Importance in knowledge	Pearson correlation	0.508**	0.124	1	0.130	0.072
	Sig. (2-tailed)	< 0.001	0.198		0.174	0.453
	N	111	109	111	110	110

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

In the next question, and throughout this survey, "lighting" refers to both the natural light (that comes in through shades, skylights, or windows) and the artificial light (created by lamps or light fixtures) in the museum.

In general, when you visit a museum, how **frequently** do you notice, pay attention, or think about the lighting in the museum?



**Fig. 8** Diagram in the form of a pie chart showing the public’s response to museum lighting in general (Data were collected via Google Forms with physical presence).

**Table 2** Light and movement. The correlation between the variable’s attention to light and movement in the museum space (The data are obtained from the processing with the SPSS system after the visitors’ responses).

Attention to light	Pearson correlation	0.243*	0.253**	0.130	1	0.332**
	Sig. (2-tailed)	0.010	0.008	0.174		< 0.001
	N	110	108	110	110	109
Light effect of movement	Pearson correlation	0.046	0.296**	0.072	0.332**	1
	Sig. (2-tailed)	0.632	0.002	0.453	< 0.001	
	N	110	109	110	109	110

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Furthermore, a noteworthy but weak positive correlation was observed between the degree of attention directed toward lighting and the perceived impact of light on movement (Table 2). This suggests that individuals who pay closer attention to lighting nuances within the museum environment also tend to perceive a more pronounced influence of light on their sense of movement. This discovery underscores the intricate relationship between visual stimuli, spatial perception, and the cognitive engagement of museum visitors, highlighting the potential significance of lighting in shaping their holistic museum experience.

### 3. Conclusions

In the multifaceted realm of museum architecture, curation, and visitor experience, our research journey embarked on a quest to unravel the conflicts that inherently shape the contemporary museum experience. Through our analysis, we have uncovered the pivotal

role of light, in the interplay between architecture and museum spaces, recognizing it as a transformative element that impacts the visitor experience profoundly.

In the diverse realm of museum architecture, curation, and the visitor experience, conflicts can serve as catalysts for positive change. This understanding suggests that museums have the potential to evolve into spaces where conflicts are not mere challenges but transformative forces, propelling culture, art, and knowledge to new heights. In this context lighting transcends its utilitarian function, becoming an artistic medium and a preservation challenge. It guides the eye, shapes emotion, and influences perception. This understanding underscores the importance of lighting in crafting immersive and enlightening museum experiences. Furthermore, our study reveals the intricate interplay between the quality of light and the emotional resonance it invokes. Our research underscores the significance of lighting in creating

ambiance, setting the tone, and ultimately enriching the visitor’s encounter with art and culture.

In essence, our journey through the multifaceted landscape of museum architecture and curation has illuminated a path forward. It is a path that acknowledges conflicts as integral to progress, embraces light as a transformative element, and envisions museums as dynamic spaces of enrichment and understanding. As we conclude this chapter of inquiry, we look ahead to museums where conflicts are not obstacles but catalysts, ensuring that culture and art continue to flourish and inspire generations to come.

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