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Cinema Parisien 3D: 3D Visualisation as a Tool for the History of Cinemagoing

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Abstract: *In this article we evaluate the relevance of 3D visualisation as a research tool for the history of cinemagoing. How does the process of building a 3D model of cinema theatres relate to what we already know about this history? In which ways does the modelling process allow for the synthesis of different types of archived cinema heritage assets? To what extent does this presentation of “content in context” help us to better understand the history of film consumption? We will address these questions via a discussion of a specific case study, our visualisation of Jean Desmet’s Amsterdam Cinema Parisien theatre, one of the first permanent cinemas of the Dutch capital. First, we reflect on 3D as a research tool, outlining its technology and methodological principles and its usefulness for research into the historiography of moviegoing. Then we describe our 3D visualisation of Cinema Parisien, discussing the process of researching and building the model. Finally, we evaluate the result against the existing knowledge about the history of cinemagoing in Amsterdam and of this cinema theatre in particular, and answer the question to what extent 3D as a research tool can aid our understanding of the history of cinema consumption.*

Introduction

On 26 March 1910, the Netherlands-based cinema pioneer Jean Desmet (1875–1956) opened Cinema Parisien, his first permanent film theatre in Amsterdam. Building upon the success of the theatre that he had opened under the same name in Rotterdam the year before, with the establishment of the Amsterdam Parisien Desmet initiated the institution of permanent cinema theatres in the capital. The theatre remained functional at Nieuwendijk 69 until 1987, having been used since the Second World War also as an adult movie theatre.¹ The cinema’s 1924 art-deco interior was installed in one of the rooms at the Netherlands Filmmuseum at Vondelpark in the early 1990s and can be admired today in a recently opened cinema complex at De Hallen, a cultural centre in a converted industrial building in the western part of Amsterdam. The history of the Amsterdam Cinema Parisien is well documented, in particular because, besides a collection of over 900 films from the 1910s, and one of film posters and photographs, Desmet left behind a vast business archive that uniquely documents the early period of Dutch cinema industry and culture.²

Recently, in the context of the “Images of the Future” digitisation programme, the entire Desmet Collection has been digitised by the EYE Film Institute Netherlands. The availability of the collection in digital form opens new opportunities for investigating the history of early cinema in the Netherlands. As part of the research project “Creative Amsterdam: An E-Humanities Perspective”, the authors investigated the opportunities afforded by 3D visualisation as a tool for studying the role and place of cinema theatres in the entertainment industry of early-twentieth-century urban culture.³ On the one hand, this is compatible with a trend towards digital methods in historical research. In a recent publication on big data in the field of historiography, Shawn Graham, Ian Milligan and Scott Weingart argue that, in an era when the sources for historical research become digitally available in “ever-increasing scales”, it is imperative for historians to be able to employ digital tools of analysis in their practice (24). On the other hand, our investigation into the potentialities of 3D visualisation for film history contributes to answering the question of how digitised cultural heritage collections can be utilised in the production and dissemination of academic research.



Figure 1 (left): Cinema Parisien at Nieuwendijk 69, Amsterdam in 1976. Photograph Paul van Galen 1976. Source: Cultural Heritage Agency of the Netherlands photo collection. Licence CC.BY-SA 4.0. Figure 2 (right). Jean Desmet's membership card of the Dutch Cinema Federation. Public Domain.

In this article we evaluate the relevance of 3D visualisation as a research tool for the history of cinemagoing. How does the process of building 3D models of cinema theatres relates to what we already know about this history? In which ways does the modelling process allow for the synthesis of different types of archived cinema heritage assets? To what extent does this presentation of “content in context” helps us to better understand the history of film consumption? We will address these questions via a discussion of a specific case study, our visualisation of Desmet's Cinema Parisien in Amsterdam. The choice of this case study was motivated by its historical importance as one of the first permanent cinema theatres in Amsterdam with a long, rich history that is extensively documented. First, we will reflect on 3D visualisation as a research tool, outlining its technology and methodological principles and its usefulness for research into the historiography of cinemagoing. Subsequently, we will describe our 3D visualisation of Cinema Parisien, discussing the process of researching and building the model. Finally, we will evaluate the results against the existing body of knowledge on the history of cinemagoing in Amsterdam, and of this cinema theatre in particular, and answer the question to what extent 3D visualisation as a research tool can aid our understanding of the history of cinema consumption.

3D Visualisation as a Research Tool

In archaeology, 3D modelling and virtual reality already play a significant part in the reconstruction of the past. The very first 3D model was a visualisation of the Roman Bath complex in Bath, UK. This model was built by John Woodward, lecturer in manufacturing engineering at Bath University, on the occasion of a 1984 BBC programme on the Roman Baths, involving Barry Cunliffe, professor of European archaeology at the University of Oxford (Woodward 19). Soon after, the IBM UK Scientific Centre produced a number of 3D models of archaeological sites, including a model of the first, Anglo-Saxon Minster in Winchester, built with IBM's “Winchester Solid Modeler” technology (Reilly, “Data Visualisation”).⁴ Because of its subject matter, archaeology provided a natural showcase for technology-driven 3D visualisations, evidencing the attraction of recreating something that is no longer there. Although Paul Reilly coined the term “virtual archaeology” already in 1991,

foreseeing a future where techniques such as 3D modelling would support archaeologists in the documentation of excavations (“Towards a Virtual Archaeology”), the application of 3D visualisation in archaeology in the 1980s and 1990s was primarily technology driven, using the computer models as illustrations rather than as research tools for archaeological research.

The first attempts to implement 3D visualisation in the archaeological research process started in the early 2000s. For example, Juan Barceló conceived of 3D visualisation as a means for simulating the archaeological process of thought (9). The fact that a 3D model provides an environment to conduct experiments with different parameters and outcomes makes it highly suited for testing diverging interpretations of the same source material (see, for example, Hermon, “Scientific Method”). Bernard Frischer et al. pointed out that 3D modelling can represent thoughts and ideas and enable the translation of “empirical phenomena into geometric language” (11).

Frischer et al. were also among the first to be concerned about the validation not only of the data and methods used, but also of the models themselves. As they point out, this validation can be realised through the documentation of the process of modelling and the storage of the components of the model, accompanied by the research data and documentation on the decisions that underlie the creation of the model (7–9). In Nick Ryan’s view, the development of accessible interfaces with this kind of data would facilitate the identification of uncertainties in the modelling process as well as the generation of alternative interpretations (246). In addition, in 2009 researchers, educators and cultural heritage organisations laid down internationally recognised principles for the use of computer-based visualisation in The London Charter (Denard). This document introduced the concept of “paradata”: the creation of documentation that gives the means to record and trace the decisions behind the modelling process and, thus, contributes to the creation of reliable, accountable models (see also Baker). With this new regard for the transparency of the modelling process, the emphasis slowly shifted from the technology itself to 3D visualisation as a research tool within archaeological discourse and, more generally, the study of social processes in the past.

As promising as these method-oriented questions may seem in promoting the usage of 3D modelling as a “research tool to generate new knowledge” (Frischer, “From Digital Illustration” viii), to this day their elaboration and implementation in actual research remains limited. Fifteen years later, themes such as the “transparency of data” and the “documentation of the process of modelling” are still current (see Demetrescu). The exact scope of paradata has not yet been defined; there are no standards regarding the level of transparency or certainty, which may serve as a reference. Digital libraries with 3D models connected to the underlying data are extremely rare, mostly due to time and budget constraints. Consequently, 3D visualisations are often still presented traditionally, in print or in the form of a film, rather than as virtual environments that can be navigated by the user/viewer. The presentation of the 3D model in an interactive and freely navigable environment, with connections to instantly retrievable underlying information, is already technically possible, but generally not within reach of the scholar. In the research project on Cinema Parisien 3D presented here, we propose a solution for the publication of an accessible, transparent version of 3D visualisations.

The use of 3D visualisation in the field of film studies is coherent with recent spatial orientations in film-historical scholarship, in particular the use of spatial methods “to explore the historical geographies of film production and exhibition” (Hallam and Roberts 16). As

Julia Hallam and Les Roberts explain, scholarship in this area “focuses on cinema as social experience, conditioned by factors such as transportation networks, ethnicity, and social group as well as cinema architecture, ticket prices, and the changing patterns of work and leisure” (20). As Robert C. Allen has pointed out, such a comprehensive, spatial approach is necessary for understanding how cinema was experienced “at any one point in any place in the past” (qtd. in Hallam and Roberts 20) and, thus, how cinemagoing influenced the construction of social identity (Allen).

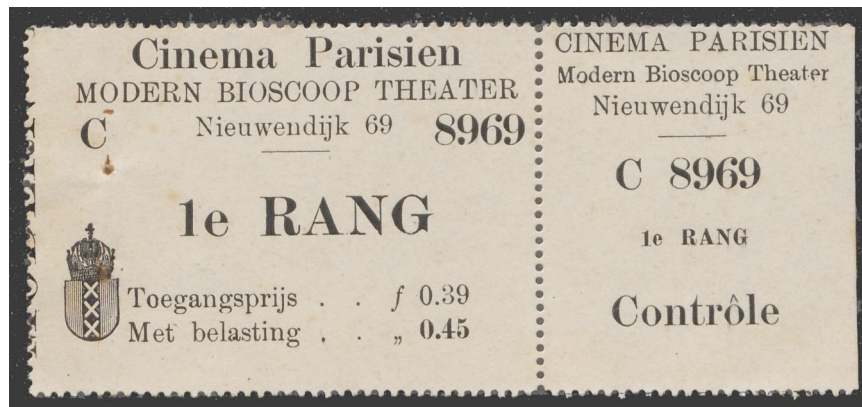


Figure 3: First class ticket, Cinema Parisien. EYE Film Institute Netherlands, Desmet Archive, MMFMA01_AF_024338.

Thus far, spatial film historiography has primarily employed GIS mapping technologies to capture the multilayered nature of cinemagoing (Hallam and Roberts). Examples of 3D visualisation of cinema theatres are very scarce and often are created for educational purposes, such as the virtual reconstruction of Charles-Émile Reynaud’s Théâtre Optique built by Museu del Cinema, Girona (“Pre-cinema Audio-visual Resources”).⁵ However, when used as a research tool, adhering to the principles outlined above, 3D visualisation has much to offer to the spatial analysis of the history of cinemagoing.

As Robert Allen noted, spatial representations of places where cinema was experienced tend to represent them as inert and ahistorical, exemplified by photo books of picture palaces (15). Employing 3D visualisation enables the evocation of the multiple dimensions of cinemagoing by creating dynamic, interactive models of cinema theatres and their environments, which document the development of the places and their social functions as they take place, over time. Moreover, we also consider the building of the 3D model itself as a dynamic process, which may be endlessly extended to incorporate new research findings, also by other researchers (Opgenhaffen and Sepers). This approach underlines the relational and process-oriented conceptualisation of space that Allen borrows from geographer Doreen Massey (16).

As Allen points out, the experience of cinema “does not exist outside the experience of space, and, as such, is the product of historically specific, embedded material practices—of performance, of display, of exchange, of architecture, social interaction, of remembering, as well as of signification and cinematic representation” (16). 3D visualisation, especially if extended into 4D by including changes over time, allows researchers to capture several of these dimensions: the architecture of the building and its sociogeographical context (shops, other places of entertainment, housing, transportation infrastructure, etc.), performance (what

was possible to do in the space of the theatre, what it looked and sounded like), exchange (consumption taking place around the visit to the cinema), and remembering (using 3D visualisation to evoke and capture memories of cinemagoing). Moreover, a research-based 3D visualisation requires a great variety of source material—building plans, photographs, drawings and other visual representations of the space, written descriptions of the building, its interior and its use, oral histories, arthistorical sources on contemporary furniture, lighting etc.—that may provide new insights and that are coherently presented when properly stored in a database and attached to the model itself. In what follows, we explain how we adopted this approach for our reconstruction of Desmet’s Cinema Parisien.

Case Study: Cinema Parisien 3D

The Cinema Parisien in Amsterdam

The decision to focus on Cinema Parisien was inspired by the cinema’s historical importance, which is well documented. While a small number of permanent cinemas were established in Dutch cities between 1905 and 1910, the real boom in the establishment of permanent cinemas occurred between 1910 and 1912 (Blom, *Jean Desmet* 89). Established in 1910, Cinema Parisien was, therefore, a frontrunner of this trend.⁶ Based on the listing of Dutch cinema theatres in the Cinema Context database, CREATE researcher Rosa Merino Claros created a dynamic map that shows the locations, and therefore numbers, of active cinema theatres in Amsterdam at any historical moment between 1900 and 2000 (“Active Cinemas in Amsterdam”). This map shows that between the years of 1910 and 1920 Nieuwendijk, the same street where Cinema Parisien was located, contained a high density of cinema theatres. As Ivo Blom points out, around the turn of the century Nieuwendijk was a respectable shopping street—not particularly chic, but definitely one class above its surrounding area (*Jean Desmet* 105). With the advent of the cinema theatres it became a livelier and more vibrant street, filled with small shops and cinema theatres with their neon lights and barkers.⁷

The early permanent theatres were subdivided along a particular hierarchy: the “elite” theatres, which distinguished themselves with lavish interiors, premieres, and splendid musical accompaniment, and the more regular, second-run theatres. While Cinema Parisien was part of the latter category, the surge of deluxe theatres in the early 1920s caused a wave of restyling of other theatres. Consequently, in 1924 Parisien received a completely new interior that was a mixture of Amsterdam School style of architecture and art deco (Blom, *Jean Desmet* 307).

Somewhere during the 1950s or 1960s, Parisien started screening (soft) pornographic material and when Nieuwendijk became a hangout for drug users in the 1970s, it won the reputation of being one of the sketchier cinema theatres in town. Notwithstanding its declining prestige, upon its closure in 1987 Ilse Hughan, Jean Desmet’s granddaughter, went to great lengths to save Cinema Parisien’s 1924 art deco interior, which was still intact. Due to her efforts, the Parisien, as mentioned, got a second life at the Netherlands Filmmuseum, which transferred the original interior to their own cinema theatre at Vondelpark in 1991. In 2012, when the Filmmuseum merged with other Dutch film organisations into the new EYE Film Institute Netherlands and was relocated to the bank of the IJ river, the Parisien got a third life when its interior was moved to the “Parisienzaal” of the recently opened Filmhallen,

where it can presently be viewed. In these different forms, then, Cinema Parisien has been a part of Amsterdam cinema culture for the past one hundred and five years.



Figure 4 (left): Nieuwendijk 65–75, Amsterdam around 1910. Postcard from the Amsterdam City Archives photo collection. Figure 5 (right): Cinema Parisien’s 1924 art deco interior, before the move to the Filmmuseum at Vondelpark in 1987. Photo: Paul van Galen. Source: Cultural Heritage Agency of the Netherlands photo collection. Licence CC.BY-SA 4.0.

Building Cinema Parisien in 3D: Preparation Phase

For the building of the 3D model of Cinema Parisien we decided to focus on the first phase in its history: from the moment of its opening in March 1910 until its first conversion in 1913. This choice was suggested by a number of reasons. Firstly, since Cinema Parisien was one of the first permanent cinema theatres in Amsterdam, this period is of historical importance. Secondly, there is an article by Paul Broers that describes the interior of the Cinema Parisien in great detail, which provided us with a good starting point for the visualisation. Finally, it soon became clear that, in order to give the model the level of transparency required for research-based 3D visualisations, a substantial amount of time had to be invested in the creation of a database including copies of the sources used, metadata on those sources, as well as paradata documenting the choices made in the modelling process. Therefore, the visualisation of the 1924 conversion, when the art-deco interior was installed, has been postponed to a next phase of the project.

Building a 3D visualisation requires both modelling skills and knowledge about the subject matter in question. Ideally, one person would possess both skills, but in our case a close collaboration between modeller and researchers was forged in order to cover both areas. While the researcher collects the source material required to build the reconstruction and does the initial interpretation, the modeller builds the visualisation on the basis of this information.⁸

The sources on which the model is based, besides Broers' article, comprise Ivo Blom's dissertation on Jean Desmet, construction plans from Amsterdam's municipal archive, information from Johan Kamermans (curator at the Dutch Tile Museum) about the tiles in Cinema Parisien, particular entries from the Desmet archive about seating and tickets, photos from the EYE Film Institute Netherlands archive, and the Beeldbank (stock image collection) from the Amsterdam City Archive, which contains pictures of both the exterior and interior of the Parisien building.

Building Cinema Parisien in 3D: Process

In the project *Cinema Parisien 3D*, modelling is an intrinsic research tool, and the path leading to the final visualisation is meticulously documented in process descriptions and the project database. Starting with the construction of the building itself, we work from a general macro scale to a very detailed micro scale: the ornaments and furniture.

Starting at macro-scale level, we imported a digitised GIS map of one of the oldest cadastre maps of Amsterdam into the 3D modelling program Cinema4D. From this GIS map we were able to model the direct vicinity of the Cinema Parisien, based on the cadastral lots and contemporary photographs from the municipal archive. The surrounding buildings have been modelled in an abstract way, in grey scale without details, in order to save time and yet evoke the spatial feeling of approaching and entering the movie theatre.

In terms of the Cinema Parisien itself, it was possible to place the building on the exact coordinates on the cadastral map and to reconstruct it from the blueprints. From that point onwards we were able to model more detail. There are drawings of the original facade (late nineteenth century) with classical elements and the indoor shop fronts and toilet facade in art nouveau style. Even the blueprint of the original proposal for the projector cabin was preserved, which was also modelled, although, as was later discovered, this drawing was never realised due to safety objections coming from the city hall. In order to give an impression of the original idea, and to include it as documentation of the research trajectory, this model of the cabin is incorporated in the final visualisation as an option that can be turned on or off. There were also drawings of the new, safer cabin that was placed at another location, on the flat roof. This drawing was less precise and more difficult to reconstruct. The difficulties in modelling an object from 2D to 3D have been described in the process descriptions for each object, including an indication of the level of certainty of all design decisions.

When the building and main objects were modelled, the more detailed objects could be reconstructed. Some aspects of the decoration, such as the elements dividing the wall in separate squares made from *papierstuc*, are depicted on the blueprints, whereas other decorations and ornaments are described in the aforementioned article of Paul Broers.⁹ This article was especially useful for its information about colours and tiled decoration in the interior. As the modeller was trying to reconstruct the interior and adding more detail, additional, unexpected research had to be carried out by the scholars, including research into tile decoration or a 1910 beer tap. This demonstrates that using 3D visualisation as a research tool is an interdisciplinary effort, requiring cinema scholars to cross over to other disciplinary areas such as (applied) art history.

As outlined above, building a 3D model can be an environment to test hypotheses. The written and drawn reconstructions made in the article by Paul Broers, as well as the underlying assumptions, could be tested during the modelling process. It turned out, for example, that some leads were a dead end or wrongly reconstructed when compared with the blueprints. Besides, it was initially unclear whether the 1910 theatre contained chairs. According to a well-known Desmet family anecdote, mentioned by Broers (1990) and Blom (*Jean Desmet* 109) and recently voiced again by Ilse Hughan (“Jean Desmet” 12’40”), the theatre initially contained no chairs: visitors viewed the short films while standing up and pushed each other out of the theatre via the emergency exit located under the screen, granting the theatre its initial nickname: “the meat mincer”. Ivo Blom has already questioned the historical veracity of this anecdote (“Pionierswerk” 99) and, indeed, records in the Desmet archive dating from 1910 suggest that there must have been chairs from the start.¹⁰ Our solution has been to include the chairs as an option, allowing users to view the theatre with or without chairs. Besides contradictory evidence, we encountered the difficulty of having to model objects based on vague descriptions, such as that of lighting described as “round spotlights grouped in 2,5 oval” (Broers 4). The initial attempt to model according to this description resulted in oddly shaped lamps. Only after extensive research in early twentieth-century lighting catalogues we were able to approximate the lighting armature described by Broers.¹¹

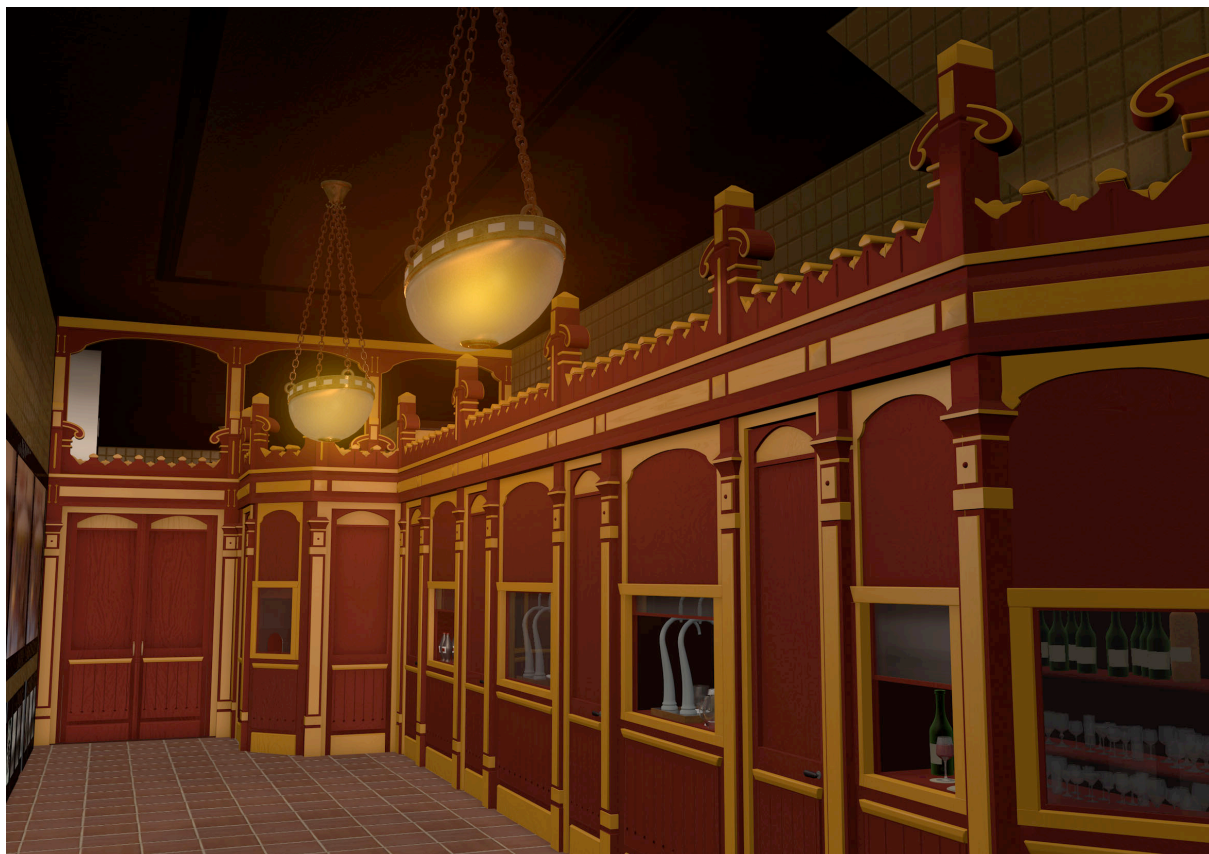


Figure 6: 3D model of the entry hall in the 1910 Cinema Parisien. Design: Loes Opgenhaffen.

The documentation of buildings that no longer exist usually does not cover all details of a building and its interior. Moreover, building a 3D visualisation provides new perspectives on existing knowledge, as in the case of the description of Cinema Parisien in

the Broers article. Consequently, during the process of modelling the Cinema Parisien in 3D, many adjustments had to be made and gaps in the existing knowledge had to be filled. This cannot be done without thorough research to support at least an educated guess. These adjustments and modifications, decisions and choices, as well as the paths that led to them, have been documented in paradata, which in our case consist of illustrated descriptions of the modelling process, the 3D models of all individual elements of the cinema theatre, references to underlying source material, and an additional version of the 3D model that is colour coded to document the levels of certainty regarding the choices made.¹²

In order to render our design choices transparent, in fact, we developed a Level of Certainty Index (LoC Index) based on our data, but also inspired by other projects that designed colour charts to demonstrate the level of certainty of their 3D.¹³ Whereas other examples of such indices are usually specifically tailored towards the project at hand, we attempted to design our LoC Index in a way that extends its applicability beyond our own specific project towards all kinds of cultural heritage visualisations. This resulted in a colour chart divided in ten colours and ten corresponding numbers, with descriptions detailing the level of certainty based on the availability and quality of the underlying research data. The model ranges from “red/1/‘most uncertain’” (there is no evidence whatsoever) to “green/10/‘extremely certain’” (the remains of the entire object are still there and are virtually incorporated in the 3D visualisation through 3D scanning).

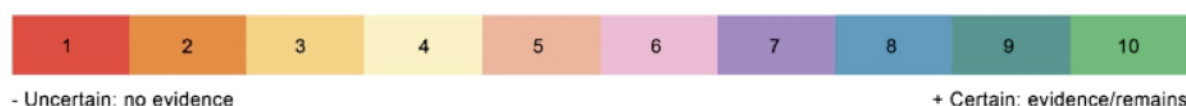


Figure 1: Colour bar of the Level of Certainty (LoC) Index developed for the *Cinema Parsien 3D* project. The full LoC Index, including the detailed description of each of the levels, is available online (“Level”).

Building Cinema Parisien in 3D: Result

The result of the building process is a complete 3D model of all public areas of Cinema Parisien as it opened in 1910, with options to choose between different versions (reflecting current discussions), such as seating or no seating in the theatre hall, or the cabin in the rear or on the flat roof.¹⁴ Upon entering the theatre, users can navigate the foyer, with its box office and shops, explore the decoration, visit the toilet and enter the theatre. Once in the theatre hall, users have the option to activate contemporary movie screenings, creating the unique option of watching old movies in an evocation of their original setting.¹⁵

The model of the Cinema Parisien and its surroundings were imported in the game engine Unity, where all the unique models (construction, shops, movie screen, beer taps, etc.) were connected to the database through C#sharp, making of the reconstruction in Unity the visual interface to query the database. There are two scenes in the Unity model: the full textured scene, evoking the cinema theatre as it may have appeared to contemporary visitors, and the coloured scene, which reflects the levels of certainty. Users can easily switch between these two scenes by clicking the F7-button. The coloured scene is accompanied by the LoC-colour chart and explanatory text.

The freely navigable Unity model of Cinema Parisien is a transparent, scientific model. Almost all the individual parts in the model can be queried by clicking on them. Once

users click on a specific item, they are presented with a pop-up window that shows the underlying source material, including the paradata that explain the choices made. All sources and paradata, when activated, are extracted from the database and shown in Unity in real time. In addition, the Unity interface of the model provides an entry point to the database itself, where users can leave comments and/or download the 3D models of the separate parts of which the 3D visualisation is composed.

In this way, the 3D reconstruction of the Cinema Parisien is not only an interactive, navigable visualisation, but it also becomes a transparent, dialectical model, never finished but always “under construction” and subject to change, thus reflecting the versatile nature of scholarly research. Moreover, many scholars can work on parts of the 3D visualisation at the same time, adding data from their own specialism or contributing comments. In this way, the visualisation will keep evolving and expanding. This is no linear progressive path: it moves between the addition and interpretation of new data, the formulation of new hypotheses about the design of the building that can be tested in the model, and the development of arguments that may be transformed into evidence for an explanation, resulting in a new, enriched and improved version of the model (Opgehaffen and Sepers 414).

Evaluation

Looking back at Allen’s definition of the spatial dimensions of cinemagoing, our model provides insight into a number of dimensions of going to the movies at Cinema Parisien in 1910–1913. The architecture of the building itself has been reconstructed with a generally high level of detail, accuracy and transparency, based on a great variety of source material and documentation of the 3D building process, which is stored in a database and made directly accessible via its connection to the model. Within the building itself, the visualisation gives users a good impression of various aspects of performance and exchange, from entering the building, buying a ticket and a drink, entering the theatre hall, projecting and/or watching a movie and even going to the bathroom. The immediate context of Cinema Parisien has been evoked in a very limited, abstract way only—we have included grey, empty facades to give an impression of the scale of the surrounding buildings but these contain no indication of their function. A more comprehensive evocation of the architectural and socioeconomic context of the cinema theatre would require more details of its situation in the city, the functional zoning of area as well as its location in the urban infrastructure.

3D visualisation, because of the highly evocative, realistic impression it yields, requires a level of detail that is often not necessary for textual descriptions or drawings. Therefore, our use of 3D visualisation as a research tool invited research into a great variety of source material and knowledge that extended beyond film history into the areas of archaeology, architecture and applied art. This interdisciplinary research has exposed contradictions in the source material, which invited the testing of some previous assumptions—in particular regarding the presence of chairs, confirming that the “mincer” system described by Broers and Hughan probably did not exist in this theatre. By allowing users to see the theatre with or without seating, such various hypotheses can be visualised and discussed.

Besides the testing of previous assumptions, the value of 3D visualisation lies in its capacity to convey a sense of space and scale, including the positioning of various sections of the building vis-à-vis each other. The capacity to interactively navigate the virtual cinema

theatre evokes the historical sensation of what visiting the 1910 theatre may have been like. This historical sensation may be further improved by adding more details, in particular those that evoke the sensual experience of the theatre, such as a soundscape (glasses being filled with beer, people talking, the noise of the projector), the presence of smoke, and the colour temperature of the lighting.¹⁶ Another area of expansion could be to provide more detail on the business space and living quarters of Desmet, since he ran his entire distribution business from the offices upstairs in the same building. Such an expansion may possibly provide new perspectives on the relation between distribution and exhibition in the particular case of Desmet.

Conclusion

To conclude, what is the value of 3D visualisation as a research tool in film historiography? First, it presents both researchers and the general public with a comprehensible, attractive and evocative interface for exploring cinema-related heritage. A 3D visualisation adds an experience of space and scale that cannot be equalled by written descriptions or 2D images. Besides, the level of detail that realistic 3D visualisations require steers the researchers in directions that they may not have considered before, but that often yield unexpected sources (such as blueprints of buildings or tile tableaux advertisements that cinemas shared with shops and cafes). In addition, the transparency that an academically sound use of 3D visualisation requires invites the use of a database that not only organises one's research material, but also makes it openly accessible by other researchers, increasing the sharing of knowledge and the verifiability of results.

Used in this way, 3D visualisation of cinema theatres may be seen as a form of historiography on cinemagoing, especially if users can navigate the various transformations of a cinema theatre over time, extending it into a fourth dimension. It does, however, require multiple skills and involves time-consuming, interdisciplinary research, which is not always available or affordable. In addition, if the result can be seen as a historiographical publication, how does one make visible what the research questions have been, and how should the navigation of the space be organised to develop an argument? In other words, how should one relate the open, iterative analysis of a 3D visualisation to the "tidy linearity" of traditional historiographies? This issue has been noted by Jeffrey Klenotic, who used GIS technologies to map the history of film exhibition in a small New Hampshire town in the 1910s (qtd. in Hallam and Roberts 21). This is a point for further research: how does one translate the insights gleaned from navigating interactive, multilayered GIS maps and 3D visualisations into coherent historiographical accounts? For the time being, 3D models will have to be accompanied by written accounts, as provided in this article, or their audiovisual equivalents. Notwithstanding this, we believe they present compelling accounts of the spatial experience of cinemagoing in the past.

Notes

¹ On 18 February 1977 the theatre was the first to show the film *Deep Throat* (Gerard Damiano, 1972) to more than fifty people, provoking the authorities that had restricted the screening of hard-core porn movies to small theatres only (see "Politie neemt pornofilm mee"; Hendriks).

² In 2011 the entire Desmet Collection was included in UNESCO's Memory of the World Register, underlining its value as documentation of early cinema history ("Desmet Collection").

³ Between November 2014 and December 2015, the authors collaborated on constructing a 3D visualisation of Cinema Parisien as it opened in 1910. The initial plan to include the 1924 conversion of the theatre has been postponed in order to give preference to the documentation of the 1910 model, including the integration of all sources in a database and the connection of these data to the model itself. Norbert Bakker conducted the archival research and contributed to the integration of sources in the database; Loes Opgenhaffen built the model, conducted additional research, developed the paradata and contributed to the integration of sources in the database; Julia Noordegraaf was responsible for the overall coordination of the project. Ivan Kisjes and Maarten Sepers provided technical support for building the model, creating the database and connecting the two. At an expert meeting held on 2 December 2015, Ivo Blom, Karel Dibbets and Mark-Paul Meyer provided highly helpful feedback on our model, for which we kindly thank them.

⁴ The "3DVisA Index of 3D projects" compiled by the 3D Visualisation in the Arts Network, based at King's College London's Centre for Computing in the Humanities, describes the Winchester project as "the earliest application in the UK of 3D computer modelling to visualise archaeological data." However, on account of the fact that Woodward and his team had already applied the solid modelling technique to the 1984 reconstruction of the Roman Bath complex at Bath, the latter should be considered the first of its kind.

⁵ A more research-driven example is Charlotte Crofts's *Lost Cinemas of Castle Park* app, developed in the context of the Cinemapping project, which evokes the history of Bristol's Castle Park cinemas via a location-based audio tour enlivened with photographs of the no-longer-extant buildings. Although this app evokes the history of cinemagoing it does not involve 3D visualisation.

⁶ Dutch film culture actually lagged behind that of other European countries, both in terms of the total number of cinema theatres (Thissen, "Understanding" 1)—and, consequently, of the average number of film screenings a Dutch citizen would see (Dibbets 46)—and in terms of film production (Thissen et al. 111). Compared to countries such as Germany and England, the Dutch continued to watch films at fairgrounds for a longer period of time.

⁷ The bickers of the Parisien and its neighbouring Centraal Theater even took things a bit too far in 1914 when their quarrels led to a withdrawal of their licenses (Blom, *Jean Desmet* 110–11).

⁸ The reality of such a collaboration is that as time progresses the modeller becomes increasingly familiar with the subject matter and is able to contribute more to the project, therefore erasing this strict division of labour.

⁹ The squared decoration is indicated on the blueprints. The material applied is *papierstuc* (papier-mâché mixed with glue, chalk and sand), and the colours used are described by Paul Broers.

¹⁰ For example, the rental contract from the Zuidhollandsche Bierbrouwerij besides a counter and beer tap includes “one hundred and eighty-two *cinéma fauteuils*”, to be rented from 25 April 1910 onwards (“Rental Contract”). An invoice dating from 24 March 1910 from an expedition company indicates the delivery of “182 theatre chairs” (“Invoice”).

¹¹ The paradata on the visualisation of the lighting in Cinema Parisien is accessible by clicking on the lamps inside the cinema (see note 14 below).

¹² These paradata are accessible through the model itself (see note 14 below).

¹³ See Aparicio Resco; Apollonio and Giovannini; Hermon and Nikodem; Kensek, Swartz Dood, and Cipolla.

¹⁴ The web version of the model is to be viewed with browsers that are compatible with the Unity Web Player, such as Firefox, Explorer or Safari (“Cinema Parisien 3D”). Upon entering the model, users are informed about how to navigate the photorealistic version of the model and how to access the colour-coded version (the F7 button allows for switching between the two). A separate button allows to switch between the underlying source documentation and the paradata documentation on the design decisions, which may be retrieved by clicking on the various elements of the cinema theatre and its decoration.

¹⁵ On the basis of the Desmet archive and exhibition data in Cinema Context it is possible to reconstruct at least some of the screenings (“Film in the Netherlands”). It is our aim to eventually connect to the model those movies that have been preserved and are digitally available at EYE.

¹⁶ More details on the interior may be obtained from research in sources related to the removal and reinstallation of the 1924 art deco interior, as held by Ilse Hughan and by architect André van Stigt, who oversaw the latest installation of the interior in De Hallen.

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