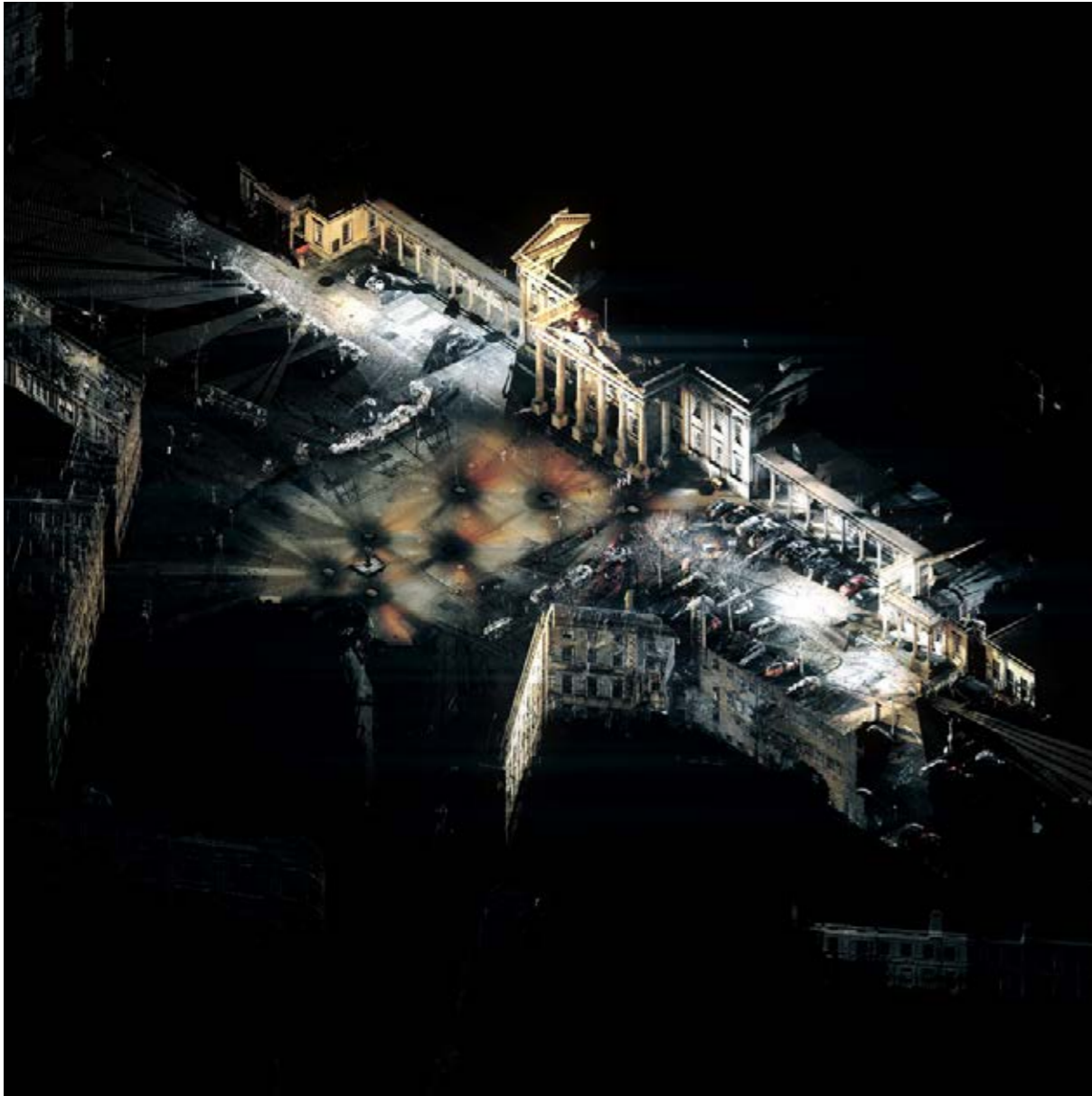


# Synthetic Spaces

## Prof Nic Clear

# Synthetic Spaces: The Digital Exploration of Three Sites in Huddersfield

Prof Nic Clear



*Synthetic Spaces: 3D-Scan of Huddersfield Railway Station,*  
(2019) Digital Print.

# Project Description

Synthetic Spaces is a project that uses 3D Laser scanning technology to create an immersive installation and a series of complex layered images of three iconic sites in Huddersfield: Castle Hill, Queensgate Market and the Railway Station.

The title Synthetic Spaces alludes to the way the data produced by the laser scans, in the form of a point-cloud model, facilitates both a precise mapping of the 'actual' spaces, and offers the opportunity to manipulate the information as if it were 'virtual' model, so that complex non-linear narrative 'portraits' of these sites can be developed.

**Project Duration:**

2019 - 2020

**Funder:**

£4666.62 School Research Funding to cover installation costs  
Market Gallery.

£4580.00 School Research Funding for SUSAS Exhibition to cover  
installation and transport costs.

**Research Partners, consultants, collaborators:**

Project Team:

Project Concept, Exhibition Design and Text: Nic Clear

Images: Nic Clear, Hyun Jun Park

Scans: Nic Clear, Hyun Jun Park

Digital processing: Hyun Jun Park

Video:

Directed, Edited, Sound, Nic Clear

Computer animation: Hyun Jun Park



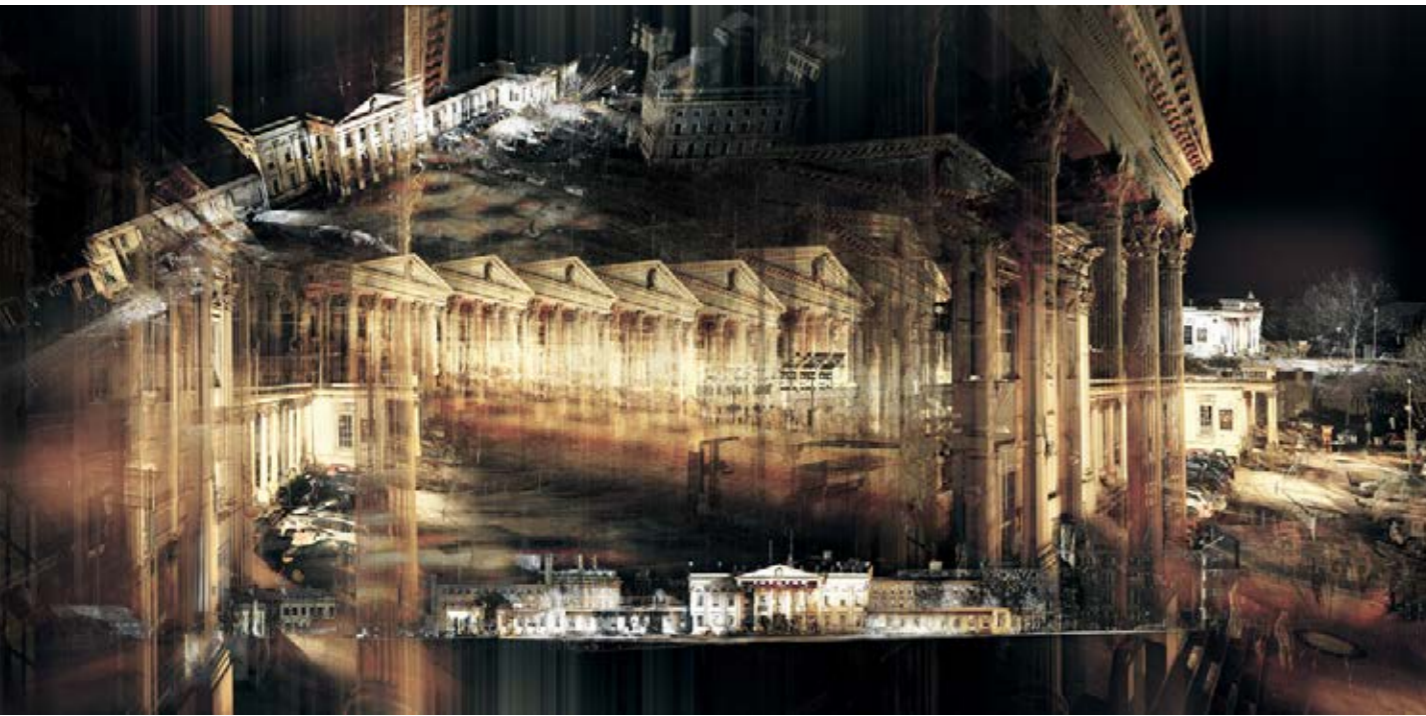
## Research Aims & Objectives

### Research Aims:

- To use 3D laser scanning technology as part of a practice-based research strategy to capture and construct detailed digital point-cloud models of three sites in Huddersfield and to use the data to create artworks, including an immersive installation and composite drawings, to explore narrative and experiential aspects of those sites.
- To produce representations developed from 3D laser scanning to create 'cognitive maps' (Jameson 1982) that operate in the synthetic space between indexical forms of acquisition and non-linear forms of production that explore the 'production of space' as described by Henri Lefebvre's 'production of space' (Lefebvre 1992) in relation to concepts of spatial practice, spatial representation and spatial experience.

### Research Objectives:

- Obtain detailed 3D laser scan information of three sites and manipulate the data to create digital video animations and drawings that use the technical possibilities of the scanning methodology to create aesthetic outcomes that expand the possibilities of spatial representation.
- Create a series of works combining digital video, still images and sound, alongside site and historic research, to develop narrative interpretations of three sites in Huddersfield as a way of representing contemporary issues in the town through the creation of an immersive portrait.
- Create representations using 3D laser-scanning that explore ideas of how we 'produce' the complex spaces of everyday life and examines the gap between measured spaces and highly subjective conceptions of time and place.
- Use scanning technology to develop cognitive maps of the psycho-geographies of post-industrial late capitalism that explore the nostalgic assumptions that intrinsic to concepts of Huddersfield's townscape.



## Research Context

It is usual practice for 3D laser scanning to be used to create high resolution digital data, in the form of a 'point-cloud' model, for surveying purposes to document the physical characteristics of a site. This information can be archived, or converted into an editable mesh model as part of a design project. However, point-cloud models have a very distinctive and powerful aesthetic of their own.

Synthetic Space was an opportunity to develop a project that used the point-cloud data alongside a narrative focus to explore ideas regarding how spaces are produced, experienced and practiced (Lefebvre 1992). This was achieved through the creation of an immersive video installation and a series of graphic pieces utilising complex layered compositions. The representations take the form of a 'cognitive map' (Jameson 1982) that integrates a detailed visualisation of the space alongside immersive and experiential ways of representing space through the use of time-based techniques.

The author has been using film and animation to develop architectural projects for over 25 years (Clear 2014), and experimenting with laser-scanning technology since 2015, principally to document historic buildings and archiving exhibitions and installations. While these 'experiments' have yielded some interesting results and developed an important skill-base, the scan-data had not been used to create specific practice-based research outputs.

*Synthetic Spaces: Huddersfield  
Railway Station, Chronogram 01  
(2019), Digital Print*



Synthetic Spaces contributes to building new forms of digital practice in the use of scan data to create evocative images, both moving and still, that move between traditional indexical forms of representation (Benjamin 1986) and non-linear forms of digital production (Manovich 2000). This approach to spatial acquisition, manipulation and representation is a distinctive component of the research.

The original exhibition was developed as a proof of concept but due to the interest in the work the opportunity arose to use these outcomes in a series of further exhibitions. The data set generated by the original scans has been consistent throughout, the drawings have been expanded and amended for each exhibition and the immersive animation produced for the Market Gallery exhibition was edited and reformatted for the exhibitions in New Zealand and China.

The text-based work has been used in public lectures and presentations to expand the theoretical issues around the use of scanning outside its conventional context, and a book chapter identifies the work as a tactic in the use of exhibition-based practice as part of an academic research strategy in the School of Art, Design and Architecture.

*Synthetic Spaces: Queensgate Interior  
Chronogram (2019). Digital Print*

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>Synthetic_Space
>
>Digital_Exploration_of_Three_Sites_in_Huddersfield
>
>Victoria_Tower_Castle_Hill
>
>Queensgate_Market
>
>Huddersfield_Railway_Station
>
>3D laser scan data is used to create narrative maps of 3 iconic sites in Huddersfield
>The manipulated scan data is used to represent these spaces in unique ways through the production of images, animations, and drawings to create synthetic spatial models that exist between the virtual and the actual, exploring the boundaries of contemporary spatial representation.

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>Synthetic_Space
>
>Victoria_Tower_Castle_Hill
>
>53.6223°N
>1.7723°W
>Built_1899
>Architect_Isaac_Jones
>Grade_II_designated
>
>The Castle Hill site has been in human occupation for over 4000 years.
>In the 19th century it was used for political rallies by the Chartist movement, it was also a popular spot for bare-knuckle boxing, dogfights and cockfighting.
>The Victoria Tower was constructed to celebrate Queen Victoria's Diamond Jubilee, the height of the tower is 106 feet making the very top of the tower 1000 feet above sea level.

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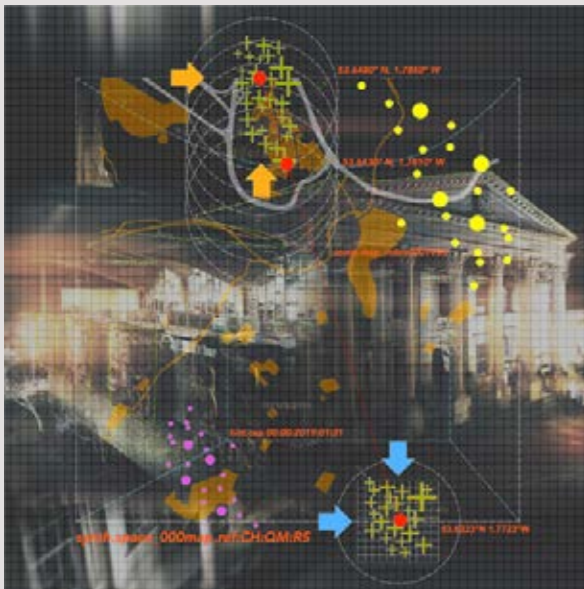
>
>Huddersfield_Railway_Station
>53.648°N
>1.785°W
>Built_1846_1850
>Architect_James_Pigott_Pritchett
>Grade_I_Designated
>
>The neo-classical Victorian Railway station is often thought to have one of the finest facades in the United Kingdom. The symmetrical elevation is organised around a giant portico consisting of six columns in width and two in depth in the Corinthian order.
>In front of the station is St George's square which features a statue of Labour politician Harold Wilson who twice served as Prime-Minister.
>On the corner of the square is the George Hotel where the Rugby League was formed on 29th August 1895

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>Synthetic_Space
>
>Queensgate_Market
>53.643°N
>1.781°W
>Built_1970
>Architect_Seymour_Harris
>Grade_II_designated
>
>Brutalist public market featuring 21 free-standing columns supporting 17.5m x 9.5 asymmetrical hyperbolic paraboloid shells that support the central market space with exterior enclosures hung from the concrete structures.
The facade facing onto Queensgate sees concrete cantilevers sailing out over the retaining wall which is decorated with nine monolithic ceramic relief sculptures by the artist Fritz Steller, the largest ceramic sculpture in the world

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Synthetic Spaces: (2019) 3-Sites Context Plan + text. Digital Print

Synthetic Spaces: Castle Hill Site Plan + text (2019). Digital Print

Synthetic Spaces: Huddersfield Railway Station Site Plan + text (2019), Digital Print

Synthetic Spaces: Queensgate Market Site Plan + text, (2019). Digital Print

# Research Methods & Process

The project was initiated with an invitation to exhibit in the Market Gallery in Huddersfield with a lead-in to the exhibition of only two months. It was decided that rather than exhibiting existing scans this would be an opportunity to create new work featuring sites in Huddersfield, as previous scanning projects had no connection to the town. Three of the town's iconic landmarks were chosen as the subjects for the show: Castle Hill, the Railway Station and Queensgate Market.

Conventional photography was initially used to map out an idea of what was required, and to create a project timeline outlining the production schedule for the exhibition. The design of the exhibits took into consideration the type of access available for each site, the time it would take to capture and process the scan data as this would determine the final resolution of the works. The nature of physically scanning each of the sites also gave strong indicators as to how the animation paths and the editing of the sequences was to be constructed, as these gave an impression of how the spaces are 'performed'. Once the parameters were fixed, the production of the work was quite systematic. The scans were undertaken, test images developed, including the production of a series of composite images, or chronograms (Clear 2013), for each site created as concept images for the animation sequences.

Once complete the stills and animated sequences were rendered off, the videos edited and graded and a soundtrack for the sequence was composed which reinforced the themes of how our perceptions of spaces are composed of shifting layers, operating through highly subjective conceptions of time. An important element of the soundtrack were samples taken from a Yorkshire Television documentary from 1972, 'Home James', which followed the actor James Mason's return to Huddersfield (Boyle 1972). The differences between the version of the town represented in the documentary, vestiges of which still linger in the town's own mythos, and the post-industrial reality of the contemporary town is an important element in the project.

The Market Gallery exhibition consisted of two rooms. One for the video installation and one containing the drawings including the 'chronograms that were displayed on lightboxes. For subsequent exhibitions additional site drawings were constructed to give more regional and local context and the animations were shown on three separate screens as a video triptych.



*Synthetic Spaces: The Digital Exploration of Three Sites in Huddersfield.*  
Market Gallery, Huddersfield. 3D Laser Scan of Video Installation, (2019)



*Synthetic Spaces: The Digital Exploration of Three Sites in Huddersfield.* Market Gallery, Huddersfield. Installation view, (2019)



*Synthetic Spaces: The Digital Exploration of Three Sites in Huddersfield.* Market Gallery, Huddersfield. Installation view, (2019)



*Synthetic Spaces: The Digital Exploration of Three Sites in Huddersfield.* Market Gallery, Huddersfield. Installation view, (2019) Digital prints





*Synthetic Spaces: Queensgate Exterior Chronogram 02,*  
(2019) Digital Print

# Research Outcomes & Dissemination

The work produced for the original Synthetic Spaces exhibition has been the catalyst for a number of additional exhibitions, lecture presentations and written works. The drawings and films have been shown at an exhibition in Auckland and at two exhibitions in China, winning best project at the CSEC Biennale in Yunnan and as part of the Shanghai Urban Space Art Season (SUSAS). Four of the composite images have also been on continuous display in various commercial properties in Huddersfield Town Centre at the request of Kirklees Council since the exhibition September 2019.

The project was presented at a keynote lecture at Leeds School of Architecture's symposium on film and architecture 'Scene and Sequence: On Cinematic Urbanisms', with a version of that presentation also presented at a symposium in Huddersfield on perspective. A more focussed presentation about the use of laser scanning was the subject of a paper submitted to the annual RIBA Research Matters Conference at the University of Nottingham. This piece was expanded at a public lecture given as part of the exhibition in Auckland and most recently a more formal version of these ideas has been accepted for the IASTE Conference in September 2020 (delayed due to COVID 19). Synthetic Spaces was published as part of the catalogue for the '4th 'CSCEC' Cup western 5+2 Biennale' and book chapter on exhibition practice was published in August 2020.



*Synthetic Spaces: The Digital Exploration of Three Sites in Huddersfield.*  
Market Gallery Exhibition Poster. (2019) Digital print

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<b>Exhibitions:</b>	2019	<p>Synthetic Space: The Digital Exploration of Three Sites in Huddersfield. Market Gallery, Huddersfield. (31st January – 4th March)</p> <p>Synthetic Space: The Digital Exploration of Three Sites in Huddersfield. WZ Building, AUT, Auckland, NZ. (24th – 28th June)</p> <p>Synthetic Space / Sensorium 2, Shanghai Urban Space Art Season, Shanghai. (5th October to 30th November 2019)</p> <p>Group Show: 4th 'CSCEC' Cup, Western 5+2 Biennial, Exhibition of Environmental Art and Design, Yunnan Arts University, China. (21st – 23rd November)</p> <p>Semi-permanent display at various locations in Huddersfield Town Centre . (July 2019 ongoing)</p>
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<b>Text:</b>	2019	<p>Synthetic Spaces', ' The 4th 'CSCEC' Cup western 5+2 Biennale exhibition of Environmental Art Design. Beijing: China Architecture &amp; Building Press (pages 312 -313).</p>
	2020	<p>'Designing Curation: The Exhibition in Art, Design and Architecture', in Bailey, R., Powell, A., Clear, N., Fitzpatrick, D., Pittwood, L., (eds). Temporary Contemporary Year 1. Huddersfield: Huddersfield University Press. (pages 68 -81).</p>

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<b>Talks / Presentations:</b>	<p>Paper: 'Synthetic Space, RIBA Research Matters, Nottingham. (18th October)</p> <p>Public Lecture: "Synthetic Spaces: Mapping Post-continuity Architectures', AUT, Auckland, NZ. (24th June)</p> <p>Paper: 'Synthetic Spaces: Mapping Post-continuity Architectures', in ' Vision, Perspectiva and Shifting Modalities of Representation', University of Huddersfield. (17th May)</p> <p>Public Lecture: 'Synthetic Spaces: The Moving Image in Teaching, Practice and Research', Professoriate Lecture Series, University of Huddersfield. (20th February)</p> <p>Keynote Lecture: 'Synthetic Spaces: The Moving Image in Teaching, Practice and Research', 'Scene and Sequence – On Cinematic Urbanisms', Leeds School of Architecture. (13th February)</p>
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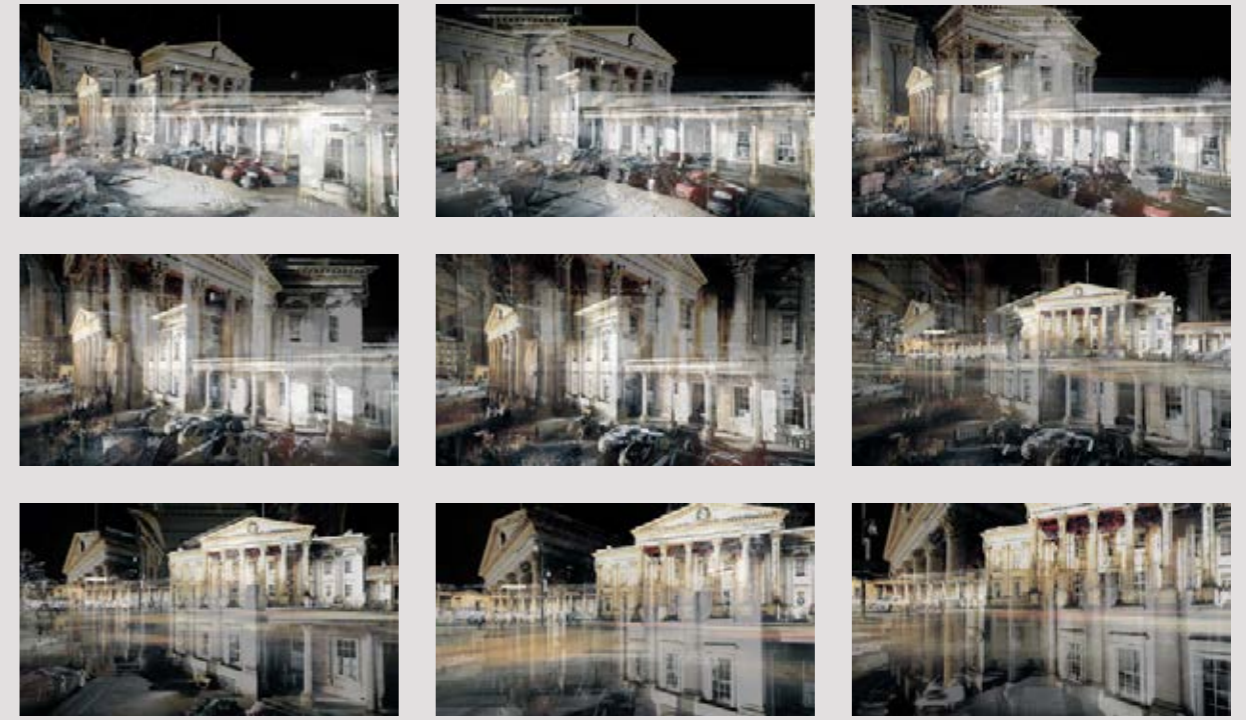
*Synthetic Spaces: The Digital Exploration of Three Sites in Huddersfield.*  
AUT, Auckland. 3D Laser Scan Installation view, (2019)



*Synthetic Spaces* Shanghai Urban Space Art Season, Installation View, (2019)  
Video Installation, Digital Prints



*Synthetic Spaces: The Digital Exploration of Three Sites in Huddersfield.*  
Castle Hill Video Stills, (2019) Digital Prints



*Synthetic Spaces The Digital Exploration of Three Sites in Huddersfield.*  
Huddersfield Railway Station Video Stills, (2019) Digital Prints



# Conclusion

Synthetic Spaces demonstrates the tremendous potential laser-scanning has to transform the way in which we document, explore and represent spaces, and while it is mainly used for conventional surveying purposes, the project shows how data generated by point-cloud models can facilitate the creation of immersive and experiential forms of aesthetic output.

In the exploration of the three sites in Huddersfield, through the creation of animations and complex layered images, the Synthetic Spaces project demonstrates that laser scanning, combined specially designed soundscapes, can be used to create evocative spatial representations that take the form of narrative portraits of the sites. These 'cognitive maps' can be understood as visual articulations of Henri Lefebvre's conceptions of the social production of space (Lefebvre 1990), in that they embody the practiced, the measured and the experienced.

As representations the images carry with them the technical veracity of the original scans and the incorporeal aesthetic possibilities of editable digital data. The effect of these visualisations is to capture the illusive and uncanny qualities of Huddersfield as it is caught between its industrial past and the uncertainties of its current status. The ineffability of these images is an ideal medium to express the liminal qualities typical of many of the spaces of late-capitalism.

# References

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Jameson, Fredric (1988). 'Cognitive Mapping'. In: Nelson, C., Grossberg, L. [Ed]. 'Marxism and the Interpretation of Culture'. Chicago: University of Illinois Press.

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Manovich, L. (2000). 'What Is Digital Cinema?', in Lunenfeld, P [Ed]. 'The Digital Dialectic: New Essays on New Media'. Cambridge: MIT Press.



**Output Type:**

Curation of exhibition, solo exhibitions,  
contribution to collaborative group exhibitions,  
architectural design, media installations