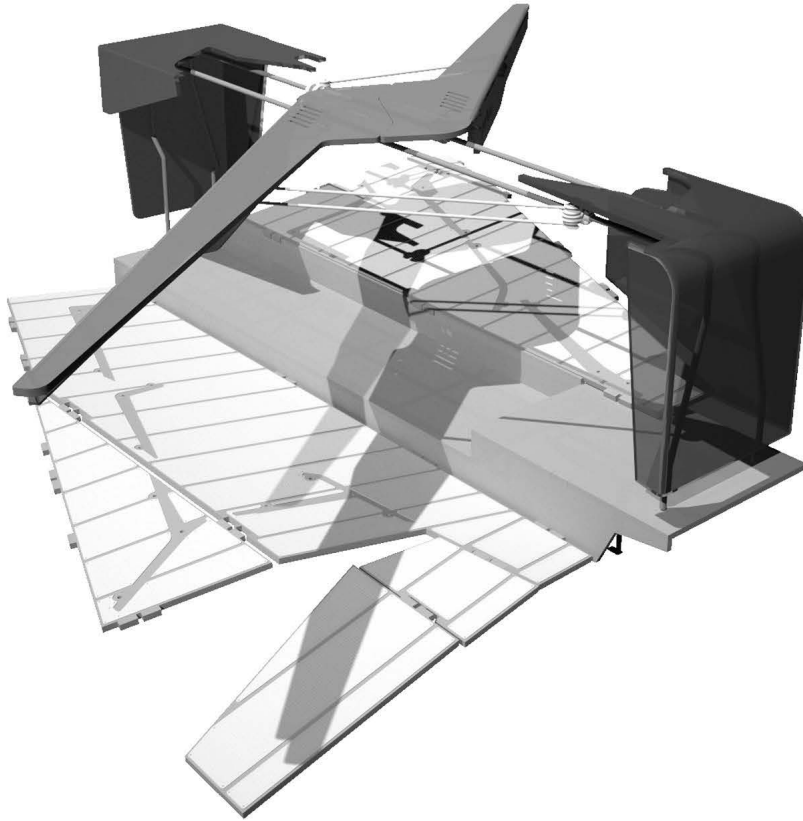


PERFORM/THE SCAN:

EXPERIMENTAL STUDIES IN 3D SCANNING AND THEATRICAL PERFORMANCE

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1 Overview of areas defined by the authors as the site for the PerFORM/The Scan experiments.

ABSTRACT

PerFORM/The Scan (2013) develops 1:1 collaborative and site specific acts between designers and performers through 3D scanning, bespoke instrumentation, robotics, rehearsal and live performance. With a particular emphasis on how 3D scanning may be manipulated in situ, the work seeks to mediate between live performance and digital representation, and thus explores a new relationship between the performance and audience through time and location. The work is defined by two acts, the first taking place in April 2013 (Act 1), and the second in September 2013 (Act 2), at the Royal Central School of Speech and Drama, London.

ACT 1 consisted of a series of performance experiments in tandem with a routine 3D survey. The experiments intervened across a suite of scheduled capture positions with unscheduled performance tests that explored conditions such as sound, movement, materiality, dialogue, montage, “blind spots”, building fabric and narrative. For Acts 2 and 3, three positions within the RCSSD building were selected to receive the installation of paired bespoke instruments. Each of these paired instruments, numbered 2.1, 2.2 and 2.3, incorporate a 3D scanner head mounted on a bespoke armature that face a second housing of programmable reflective panels. The orientation of the paired elements to one another is governed by the intention to generate a reflected space only viewable to the scanner.

ACT 2, the installed instruments capture performances that are designed to “occupy” the hidden space in the presence of an audience who only see the performance that is being reflected. In PerFORM/The Scan: ACT 3, the “occupied” digital model is processed through analytical animations and digital drawings, that are presented at a public exhibition where the ACT 2 audience return to interrogate the work.

PERFORM / THE SCAN: EXPERIMENTAL STUDIES IN 3D SCANNING AND THEATRICAL PERFORMANCE

Collaborative acts in architectural and theatrical design and production involving 3D modelling and prototyping, 3D scanning, bespoke instrumentation, robotics, rehearsal and live performance.

Research Questions:

1. How may high definition 3D scanning, as a time based and “live” site survey, be explored both as a speculative investigation and a pre-emptive record of scenographic and architectural strategies?
2. How may performance space be mediated by digital media and production technologies, and how may these technologies also effect design strategies for performance spaces?
3. How may emergent digital media and production technologies redefine the role of the audience as performance agents, and how this informs design strategies for physical and digital space?
4. What role does materiality (in particular, mirrors and reflective materials) and immateriality (digital technologies) play in this process?

INTRODUCTION

The Scan presents a sequence of investigations that utilise an ad hoc space at RCSSD’s Eton Avenue premises to explore synthetic processes of design prototyping and exploratory performance. Central to the work is the manipulation of 3D LIDAR scanning as a critical and creative spatial tool (Rowe 1982). The work is developed in two acts; firstly, between 26 -30 April 2013, through a series of hybrid test exercises in surveying selected site conditions and simultane-

ous performance experiments, and secondly throughout September 2013, through a series of synthesised performance events and kinetic architectural installations relayed through 3D LIDAR scanning and subsequent time based architectural representation.

THE SCAN: REINVENTING A WORK IN PROGRESS

This latest phase of research expands team of collaborators from The PerFORM Project, to include the theatrical production company SHUNT, and ScanLAB projects (a new practice specialising in 3D Scanning and Advanced Visualisation led by MARCh U23 graduates Matt Shaw and Will Trossell). This broadening of the collaborative network has been prompted by an interest to explore new territories of creative synthesis between the disciplines of theatre making and making theatre. In this regard, a threefold set of conditions converged to define the potential for such synthesis to occur and be explored.

Firstly, the authors developed an interest in how 3D scanning might provide a bridge between visual and physical realms and thus how it might also provide an opportunity to develop synchronised collaborations in design and performance. Secondly, the authors developed an interest in further exploring the collaboration with an established theatrical production company, and at a scale of 1:1. And thirdly, the authors renewed an interest in Katrina Varian’s design proposal whilst a student in MArch U23 (2007-08), which speculated on the potential to envelope a cluster of external spaces at Eton Avenue as a series of “parasite” spaces to house experimental performance and/or audience locations.

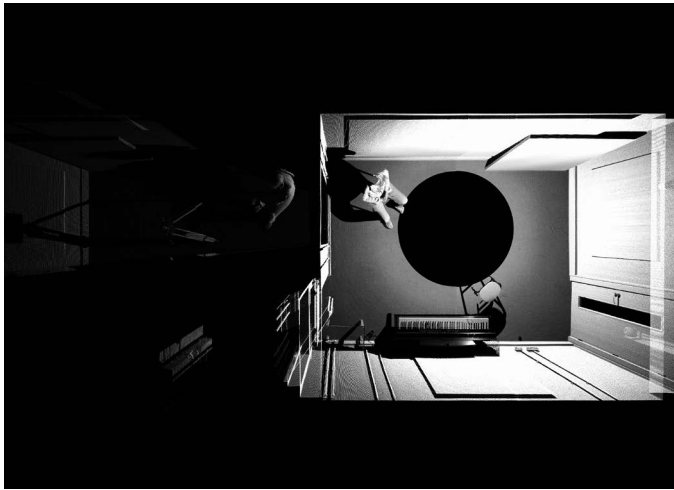
All three developments led the authors to revisit RCSSD’s premise at Eton Avenue as a testbed for further collaboration, that would incorporate experiments in 3D scanning and live performance, acted upon a series of found sites across the institutions estate. These experiments began in April 2013.

“Transparency may be an inherent quality of substance – as in a wire mesh or glass curtain wall, or it may be an inherent quality of organisation – and one might, for this reason, distinguish between the real or literal, and a phenomenal or seeming transparency” (Rowe 1982).

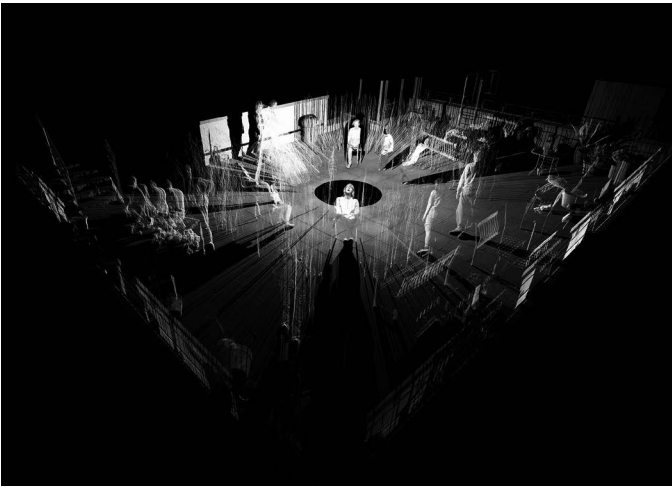
The sites for PerFORM/THE Scan are located within the RCSSD premises on Eton Avenue, Swiss Cottage, London in an external pocket of space between the School’s primary Embassy Theatre building and the School’s Western extension for workshops, rehearsals, and offices (Figure 1). The pocket is defined by an exposed three-storey fire escape stairway and a constellation of openings across all facades that look into the pocket from various ad hoc internal positions, such as landings, corridors, utility rooms, and cafe. To the south of the pocket and inside the premises boundary lies a small lawned social area that RCSSD occasionally use for outdoor performances. Further south beyond the boundary line lies the head of Eton Avenue, a pedestrianized



2 The Crying Room. The scanner captures the figures blind side through the rebound of signals from an adjacent mirror.



3 The Crying Room. This result provoked interest in developing the reflected data as a parallel performance space.



4 Performed to a prepared script, a group of figures circle the scanner in a slow march whilst two individuals act out a spatial, temporal and audible performance.



5 The image illustrates the degree of detail and information that is retrievable and capable of cross reference to performance scripts.



6 This series of images (16-18), relay how the assembled digital model allows multiple roles to be performed by individuals.



7 Enactment of forensic scene by "RCSSD CSI Group".



8 Enactment of forensic scene by "RCSSD CSI Group".

zone populated thrice weekly by organic and specialist food stalls. From the southern boundary of Eton Avenue and facing RCSSD lies the Hampstead Theatre, a commercial venue that hosts performances of new theatrical work. This peculiar strip of space is subsequently dense with diverse transitions. Firstly, it is bounded by opposing reflections of an academic institution and a commercial venue both engaged in defining and pioneering new understandings of theatre and performance. Secondly, it is layered by the intersecting pathways of everyday commuter and residential routines, with those of display, commerce, culture, education, the mundane and the extraordinary. Thirdly it is blurred, by the dynamics each of these ingredients combine to produce a space of temporary and permanent complexities, and literal and phenomenal transparencies. In this regard, the pocket that sits to the North of Eton Avenue operates as a passive vessel to observe and interact with these conditions, and therefore has a particular capacity and profile to sustain architectural experiment more richly than the nearby conservation areas that occupy it's neighbourhood.

REVEAL: ACT 1

A routine 3D scan of an existing building is largely planned around maximising the efficiency of selected scan positions so that the exercise captures all necessary information in the fewest number of set ups. Set up positions can be seen as black circles. These are the blind spots directly beneath the unit that the instrument does not measure when operating. If undesired, they can be eliminated by data from another position that looks back to the same position. In this case they were left in, and allow the total number of scans in this assembly to be understood by the reader.

On this occasion the exercise to scan selected areas of RCSSD was exploited for simultaneous performance experimentation by two production groups, SHUNT and "CSI". Some experiments were spontaneous and others were partially scripted, based on a briefing presentation by ScanLAB two weeks prior to recording. Each experiment was designed to explore the implications for performance and documentation generated by the time based spatial capturing offered through 3D scanning. The experiments intervened across a suite of scheduled capture positions with unscheduled performance tests that explored conditions such as sound, movement, materiality, dialogue, montage, "blind spots", building fabric and narrative. A selected number of these experiments are illustrated below where captions explain the significance of results.



9 Practice Room A. One of three sites selected to receive a paired instrument for PerFORM/The Scan Acts 2 & 3.



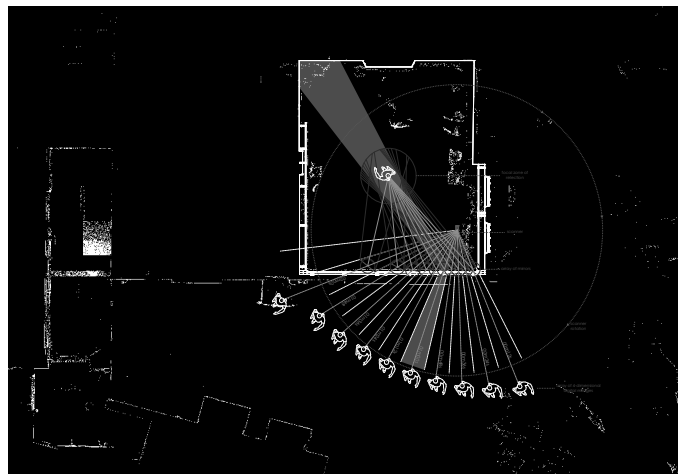
11 Test illustrating the potential to synchronise reflective panel movement with scanner speed.



10 Robotic arm is fitted with a reflective panel and sent a command to sweep in an arc whilst the event is scanned.



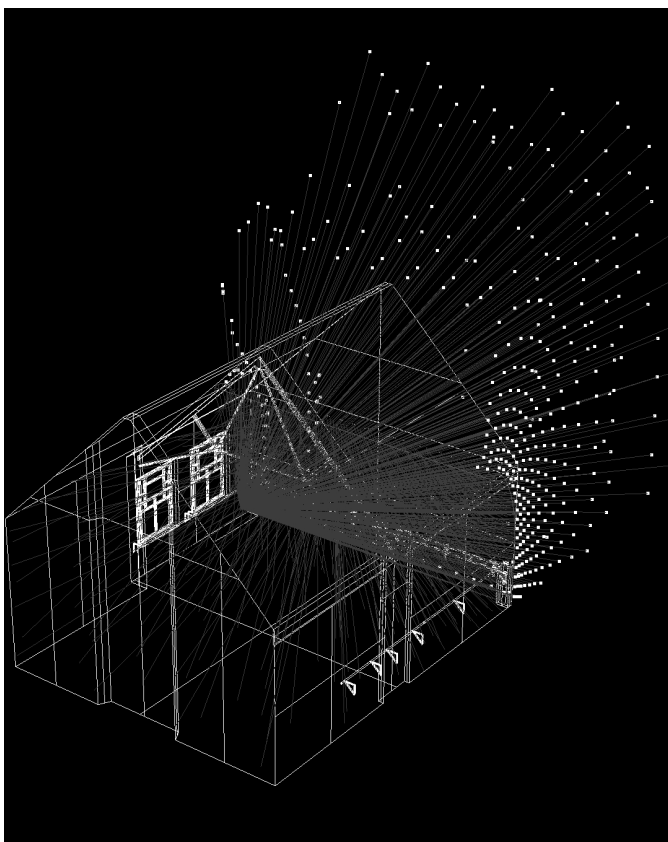
12 Results of the Digital Realisation Test, closer view.



13 Screenshot of grasshopper script at work on a 3D model generated by the site scan in Practice Room A, one of the selected site for Acts 2 & 3.

PERFORM/ THE SCAN: ACT 2 (UNDER CONSTRUCTION)

Following these experiments, three positions within the RCSSD building were selected to receive the installation of paired bespoke instruments. Each of these paired instruments incorporate a 3D scanner head mounted on a bespoke armature that face a second housing of programmable reflective panels. The orientation of the paired elements to one another is informed by results in Act 1 and further develops the enactment of a performance in real space that is designed to be read and alternatively explored in a digital model. The installed instruments capture performances that are designed to “occupy” the hidden space in the presence of an audience who only see the performance that is being reflected. This is a novel route to open up new realms for performance in the context of increasingly digitalised environments where audiences are literate and active in multiple spatial domains, such as receiving and transmitting location data, identities, information, contacts, media, etc. The design of these instruments has been assisted through a grasshopper modelling script that calculates the generation of reflected data in relation to performance positions.



14 Screengrab, alternate view.

PERFORM/ THE SCAN: ACT 3

In PerFORM/The Scan: ACT 3, the audience and performers of previous acts will return to each scene where they will be presented with visualisations of the “occupied” digital model. This model will be processed through analytical animations and digital drawings as three sets in the form of a public exhibition, at an annual festival on the theme of “Collisions” at RCSSD that presents new paradigms in theatre making. PerFORM/The Scan Acts 1, 2 & 3 will be presented as experimental studies in making theatre and how this collaboration between the disciplines of architecture and scenography have opened up new understandings on performance and its relationship to digital and found space.

WORKS CITED

Rowe, C. 1982. “Transparency: Literal and Phenomenal (with Robert Slutzky)” in *The Mathematics of the Ideal Villa and Other Essays*. MIT Press

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