

Architectural Investigation Matrix (AIM)

Architecture as Evidence, Interrogator, and Narrator – The May 1st French Pension Protests 2023 through the lens of Forensic Architecture.



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For a full list of exhibits, see: Appendix



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Abstract

A deep dive into the work of Forensic Architecture, the practise and the practice. This dissertation establishes the phrase Architectural Investigation Matrix (AIM), a term I use to summarise the set of conditions within a criminal case, which allows Forensic Architecture to exist. Introducing Architectural Theory into the world of Forensic Architecture, I re-frame the definition of what a Forensic Architect is – shifting the current definition based upon existing titles and the term ‘Forensis’ – into a legitimate, Architectural Theory based, practise of Architecture. I examine Forensic Architecture and its techniques in the case of ‘The Killing of Mark Duggan’, before supporting the dissertation and my arguments with creative practise, by applying these techniques onto the French Pension Protests on the 1st May 2023.

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Introduction

‘The set of conditions that provides a system in which something grows or develops’, sets precedent for the term Architectural Investigation Matrix, through Cambridges’ definition of the latter ‘Matrix’. AIM recognises the rise in Urban Warfare, in tandem with the accessibility of integrated technologies in society.¹ ‘As globe spanning, geostrategic concerns blur into very local, urban spaces, all of a sudden it seems normal for Western cities to face a palpable militarization’, which is ever mounted and recorded by the ‘paths, pipes, wires and other channels that spatially concentrate inflows and outflows of people, [...] energy [and] information’.^{2,3} This data is ‘inextricably entangled in the networks of [...] air, water, waste disposal, energy, transportation and Internet Service Providers’.⁴ Evermore, the integration between, man, technology and city, establishes the necessary conditions for gathering Architectural Evidence from Open-Source Networks – tapping into publicly available information – and conducting Architectural Investigation within the matrix of connected cities, visualising and spatialising evidence.

AIM is a term that summarises the overarching social conditions, Open-Source platforms, historical contexts, and Architectural Methodologies which integrate to form the practice of Forensic Architecture (FA). FA is an interdisciplinary research organisation based at Goldsmiths College, University of London. It is composed of ‘architects, filmmakers, artists, scientists, and lawyers’, among other experts.⁵ Though their work is not entirely restricted to the legal domain, the organisation specialises in the spatial analysis of urban events, concerning Human Rights cases using Open-Source Intelligence (OSINT).

Through this dissertation, I will first explore the literature which contributes to Architecture being used as Evidence, within AIM, highlighting the historical context of FA, and defining its manifesto in wider theory. I will contextualise forensic interrogation of Urban Spaces, evaluating Gordon Cullen’s ‘Serial Vision’, before moving to define OSINT and its place in space. This is a field largely untouched by researchers, as FA is established in the realm of Forensics but doesn’t have a succinct and clear link to Architecture, other than its’ practise in the recreation and analysis of Architectural Evidence.

1. ‘Matrix’, 2023 <<https://dictionary.cambridge.org/dictionary/english/matrix>> [accessed 12 May 2023]

2. Graham, Stephen, ed., *Cities, War, and Terrorism: Towards an Urban Geopolitics, Studies in Urban and Social Change* (Malden, MA: Blackwell Publishing, 2004), p.12

3. *Ibid.* p.12

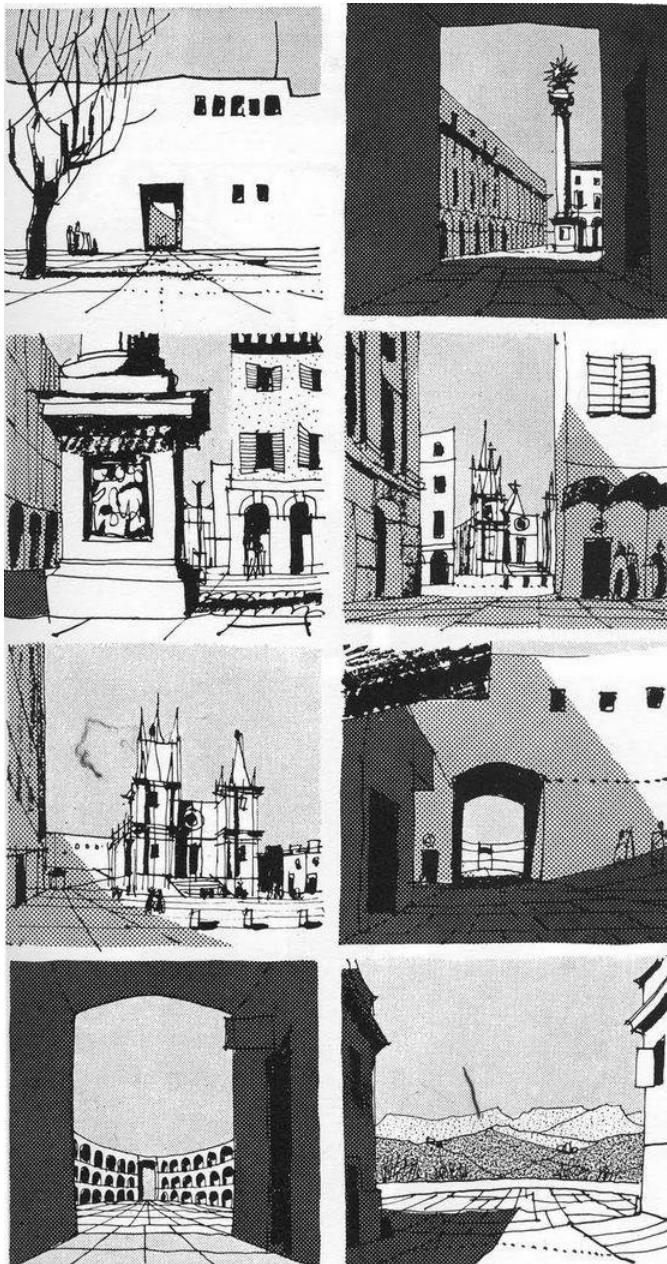
4. Mitchell, William John, *Me++: The Cyborg Self and the Networked City* (Cambridge, Mass. London: MIT, 2004), p.8

5. Weizman, Eyal, *Forensic Architecture: Violence at the Threshold of Detectability* (Brooklyn, NY: Zone Books, 2017), p.64

Next, I will explore the existing framework for FA – as an organisation – and consider the case study of ‘The Killing of Mark Duggan’. Using this context, I will proceed to explore FA’s boundaries, through an interrogation of Spatial Surveillance, pressing on the dangers and demands of a Forensic Investigation through Architecture. Applying the research of AIM to a comprehensive analysis of the French Pension Reform Protests of 1st May 2023, I will examine how Architectural Theory informs an FA investigation. Through this I will focus specifically on a piece of evidence which demonstrates two Police Officers becoming engulfed in flames, resulting from the revolt of ‘Black Bloc Anarchists’. The investigation will deploy techniques developed by Forensic Architecture, to understand the relationship between Architectural evidence, the conviction and exposure of violence and human rights violations in the Urban Realm and Architectural Theory (AIM). I will use resources accessible to the public, like Google Earth, Sketchup, Twitter, Facebook, YouTube, and Adobe, to research, investigate, and present findings through an interdisciplinary lens. This will allow me to form a personal interpretation of Architectural Evidence, in the context of AIM, determining a use case for Forensic Architecture, and the application of Architecture in Legal Cases.

Through this creative practice, I explore what the practise of Forensic Architecture is, from its grassroots theory to its application in real, contemporary situations – answering the question of how we interpret Forensic Architecture through Architectural Theory, rather than its manifesto’s original, criminological approach to the term ‘Forensis’. I will take the contextual theories, processes, resources and presentation methods, and address and summarise them under the umbrella term of Architectural Investigation Matrix. Considering evidence using legal frameworks, and architectural analysis, I will explore its application in the built environment, legal cases, and then FA, following questions of ethics, urban theory, and criminal law. The outcome of this dissertation will give chance to apply the techniques of FA to gain a personal understanding of its use-case, but also, to stand as a documentation of the events leading up to the escalation of conflict along Boulevard Voltaire, Paris, during the French Pension Protests.

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1. Serial Vision, Gordon Cullen,
Townscape, the idea of architectural
instances through urban spaces.

Architecture as Evidence

Defined by Giancarlo de Carlo in *Conversazioni su architettura e libertà*, ‘Architecture is – and can’t be anything but – the organisation and form of physical space.’⁶ Exclaiming, not that Architecture is the construction of aesthetically appealing buildings, but rather the understanding of spatial form, and the interpretation of existing spatial information. Moreover, in order to consider the key criteria of Architecture, as a field of study to expand upon, one must recognise that an Architect must approach the subject with an interdisciplinary understanding of a variety of domains: interrogating the space, and beyond its boundaries, the sociology of its users, and the history and future the space intends to inhabit – to name a few. These data points begin to form the framework within the Architectural Investigation Matrix, to begin to interpret Architecture as Evidence.

Serial Vision, beyond PLACE, in-between Architecture

Townscape, and its shorter edition *The Concise Townscape*, by Gordon Cullen expresses that ‘the space created between buildings is seen to have a life of its own over and above the buildings which create it’.⁷ A book defining Urban Theory patterns as they were identified in 1961, ‘Townscape had an important influence on the way towns were perceived and, gradually, remade’, affecting change in Western Cities on a massive scale.⁸ It goes as far as to consider the ‘art of relationship’, an interpretation of Cullen’s theory ‘Serial Vision’.⁹ This takes ‘all the elements that go to create the environment: buildings, trees, nature, water, traffic, advertisements and so on, and to weave them together’.¹⁰ Implying that, wider to the application of Architecture in designing buildings, there is a sense of evidence, of social and built, use and development within a towns’ core ‘DNA’. This forms the very basis for the construction of the town, establishing more direct data points, that Giancarlo de Carlo alluded to. Cullen ascertains that there is some sense of being able to collect this evidence, as there is ‘research that is put into making a city work [...] co-operating to form the myriad factors into a workable, viable, and healthy organisation’.¹¹

Similarly, Terry Farrell presents a case that interdisciplinary thinking should form the core processes of an Architects application of their practise to the built environment. In the Farrell Review, ‘Our Future in Place’ – the UK

6. De_Carlo and Bunčuga, *Conversazioni su architettura e libertà*, Nuova ed (Milano: Elèuthera, 2018), p.125 (Translated from Italian)

7. Cullen, Gordon, *The Concise Townscape* (Oxford ; Boston: Butterworth-Heinemann, 1995) <www.architecturalpress.com>, p.7

8. ‘Townscape | Urban Design Library’, Urban Design Group, 2020 <<https://www.udg.org.uk/publications/udlibrary/townscape>> [accessed 26 September 2023]

9. Cullen, Gordon, *The Concise Townscape* (Oxford ; Boston: Butterworth-Heinemann, 1995) <www.architecturalpress.com>

10. Ibid., p.8

11. Ibid., p.8

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governments response to ‘rapidly accelerating globalisation’, the committee presented the acronym ‘PLACE Review (Planning, Landscape, Architecture, Conservation and Engineering)’.¹² This theorised the combined efforts of wider specialities in forming built space. Farrells’ theory was pertinent to the idea that Architecture needed the input of several disciplines to be able to accomplish its best self, proposing an Architecture which considered the data and tangibility of a location and responded to it accordingly. Building from this, we can theorise, the built environment is affected by and effects the human and social activity within, producing evidence-based planning, which in turn affects the future of the built-realm. Thus, we can consider the wider application of evidence-based, interdisciplinary Architecture in the context of the ‘beyond architecture’, within instances of AIM.

Townscape, in tandem with ‘Our Future in Place’, represents the interdisciplinary attitude of Architecture and lays precedent for the expansion of the field to encompass other domains. The information, interrogated and extracted from places and spaces is, in essence, a form of evidence within the realm of Architectural Planning. It is the evidence of human activity through time. Manipulating this idea of Architecture as Evidence allows us to consider the wider application of spatial study, beyond the contemporary understanding of Architectural Planning and instead, within the Architectural Investigation Matrix. We can reverse engineer the concept of Architecture to pursue matters within the investigatory disciplines and explore space as a representation and preservation of urban activity. Using Architectural analysis – normally reserved for the addition to the Urban Fabric, we can instead analyse this fabric at specific points (Serial Vision), producing a presentable and interpretive explanation of these events in space and time.

The Foundations: Insights into Evidence, Juries, Archives, and OSINT

Moving away from the idea of Architecture as Evidence, before considering it in a legal context, will help to understand the concept of AIM further. First, we must consider what Evidence is defined as; using the Judicial System of the United Kingdom, we will establish a framework with which we can begin to tie Architectural Evidence and Legal Evidence together to better inform the contextual application of the Practice of FA.

In UK common-practice, Evidence, or more commonly ‘an exhibit’, is defined as ‘information given to the court and the jury to help them decide if a crime has been committed’, and which, ‘tends to prove the truth or probability of truth, about a fact.’^{11,13} Where the jury is ‘a group of members of the public who listen to the facts of a case in a court and decide whether or not somebody is guilty of a crime, or whether a claim has been proved’.¹⁴ Evidence is presented in court through means of exhibition following a rule known as ‘admissibility’

I. Regarding the Crown Court. Juries are not used within the magistrate’s court, evidence here is instead presented to a judge directly, who makes the presiding decision. A magistrate’s judge is a common-voluntary role. Most cases pass through a magistrate’s court, by principle, before serious offences are passed up to the Crown Court, here the defendant may plead guilty, in which case, a jury does not need to deliberate evidence. This is only the case for criminal cases, Civil cases are handled differently.

12. Farrell, Terry, The Farrell Review: Our Future In Place, The Farrell Review (Farrells London, Department for Culture, Media and Sport, 2014), p. 82 <<http://www.farrellreview.co.uk/download>> [accessed 1 March 2023], p.83 (non-verbatim)

13. Immigration, Enforcement, ‘Evidence in Criminal Investigation V5.0’ (Home Office Staff, 2020) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/919630/evidence-in-criminal-investigations-v5.0.pdf> [accessed 14 May 2023], p.5

14. Hornby, Albert Sydney, and Sally Wehmeier, eds., Oxford Advanced Learner’s Dictionary of Current English, 7. ed., [Nachdr.] (Oxford: Oxford University Press, 2009)

15. ‘Collecting Physical Evidence - Preparing Evidence for Court - Investigation - Enforcement Guide (England & Wales)’ <<https://www.hse.gov.uk/enforce/enforcementguide/investigation/physical-preparing.htm>> [accessed 28 September 2023]

meaning it must be handled in a certain way – ‘continuity and integrity’ – following chains of custody and ensuring evidence tampering does not occur.¹⁵ This is done using Archival systems, Police National Databases, and Forensic Databases. Exhibits come in many forms, including, ‘samples, photographs, videos, testimony and documents’.¹⁶ These form the primary case of a prosecution, and counter-case, of the defence, which should be presented in a way which convinces a jury, beyond reasonable doubt that a crime has or has not been committed.

Beyond the realm of criminal prosecution, but not entirely independent from it, is the idea of Open-Source Intelligence (OSINT), ‘defined as intelligence produced by collecting, evaluating and analysing publicly available information with the purpose of answering a specific intelligence question’.¹⁷ That is to say, information which is available freely, both on paper and on the internet, and largely, in the modern day, comprising of information from Social Media sites like Facebook, Twitter, and YouTube, which act as archives and live documentation of ongoing events. Stewart K. Bertram in his book *The Tao of Open-Source intelligence* highlights that OSINT is ‘just like [exhibit gathering] techniques such as interviewing, surveillance, fingerprinting and any number of others’.¹⁸ It is a tool for gathering the aforementioned exhibits used by ‘hundreds of professionals’, taking advantage of the ‘modern world [...] awash with data’, and ‘moving [OSINT] away from merely a data-collection capability to a fully formed intelligence function’.¹⁹ OSINT is the equivalent of the modern-day discovery of fingerprint analysis, manipulating the internet into a function which evidences criminal activity – among other things – and presents a case for interpretation and analysis.

Open-Source Intelligence at the helm of spatial interrogation

Uffe Kock Wiil, editor of *Counterterrorism and open-source intelligence*, attempts to break the boundary between data-collection, intelligence gathering, and spatial interrogation, in respect to OSINT. Although this application is focussed on sociology within criminology, some of these techniques begin to branch into the spatial realm, such as the ‘Network Visualisation and Interpretation – Spatial Mapping of Co-offenders’.²⁰ Researchers used publicly available crime data to visualise the home-towns of co-conspirators and determine the social-network of criminal activity to better respond with police efforts in reducing and targeting the root cause of criminality – known as crime pattern theory. This application is the first jump I raise, between understanding spatial practise in response to open-source data – forming AIM. The application of OSINT, here, within the spatial realm allows wider patterns to be acknowledged, and additional information to be inferred, such as the idea that co-conspirators social networks have densified in recent years, and distances between them shrunk. This establishes the last step within AIM, to contextualise Forensic Architecture,

16. ‘Exhibits | The Crown Prosecution Service’ <<https://www.cps.gov.uk/legal-guidance/exhibits>> [accessed 28 September 2023]

17. ‘What Is OSINT (Open-Source Intelligence?) | SANS Institute’ <<https://www.sans.org/blog/what-is-open-source-intelligence/>> [accessed 28 September 2023]

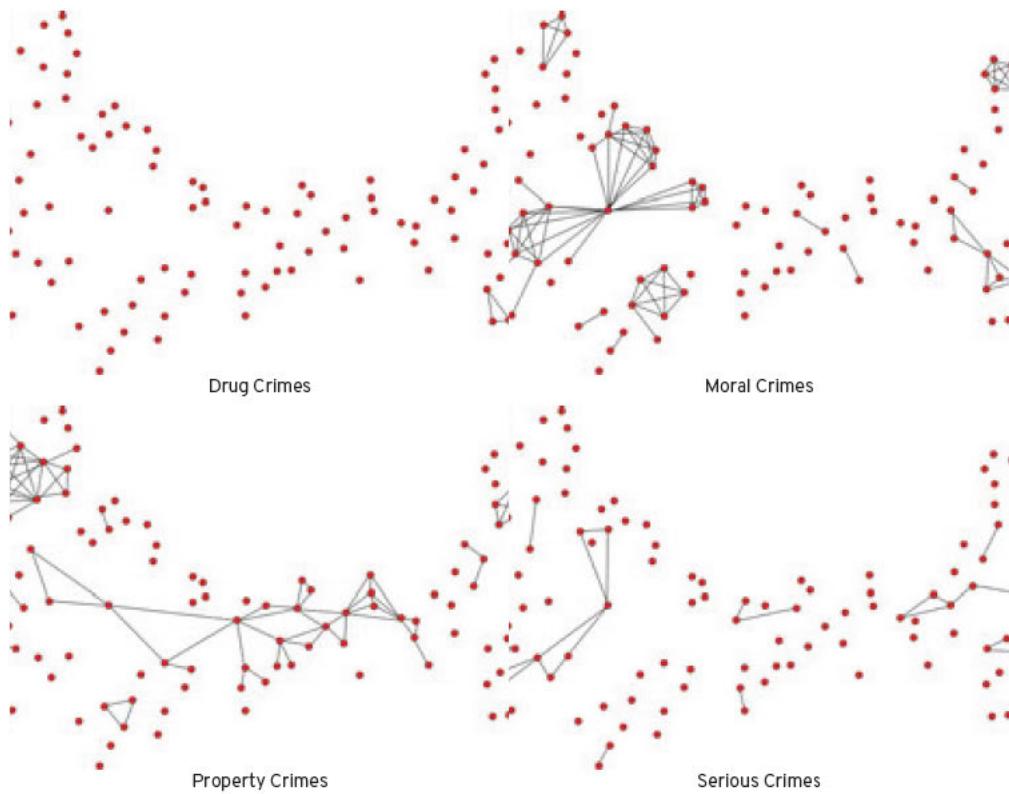
18. Bertram, Stewart K., *The Tao of Open Source Intelligence* (IT Governance Publishing, 2015) <<https://www.jstor.org/stable/j.ctt155j4bh>> [accessed 14 May 2023], p.12

19. *Ibid.* p.129

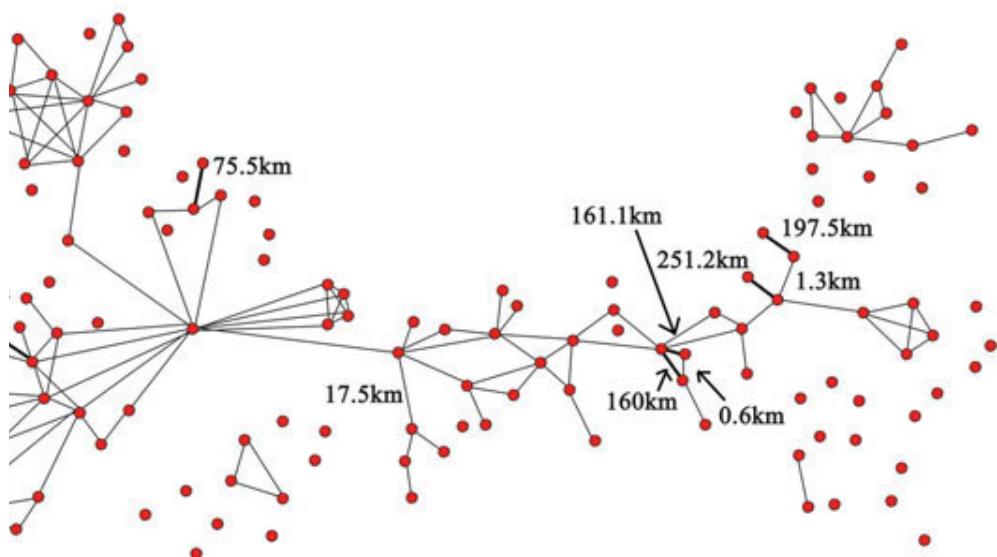
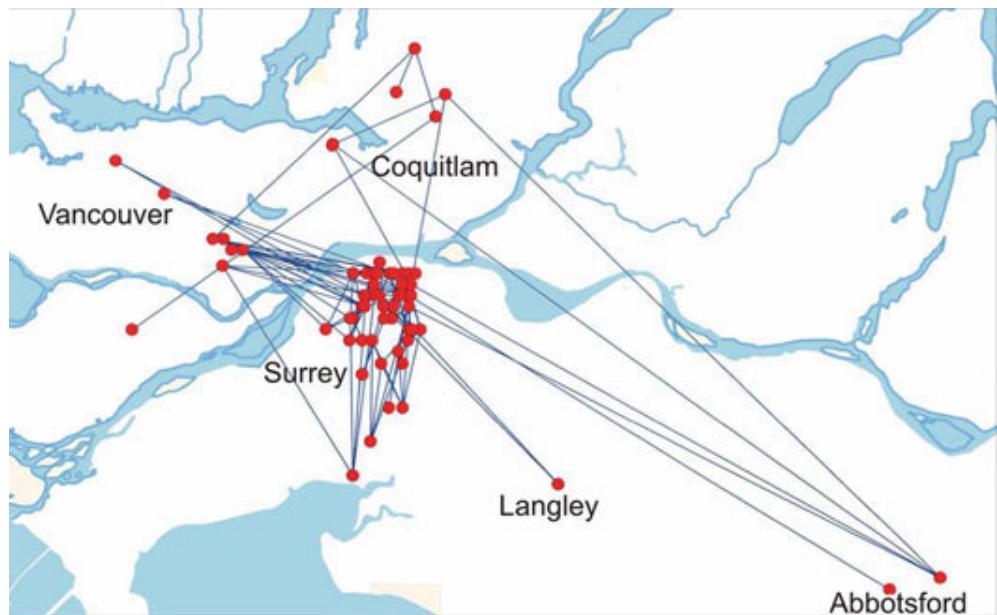
20. Wiil, Uffe Kock, ed., *Counterterrorism and Open Source Intelligence, Lecture Notes in Social Networks* (Vienna: Springer, 2011) <https://doi.org/10.1007/978-3-7091-0388-3_>, p.93–96

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as evidence that some information is accessible through this type of analysis. FA was established to investigate what more information could be extracted across spatial platforms and beyond traditional evidencing.



2. Uffe Kock Wiil, Spatial Analysis Networks, Physical Data converted to Geo-location points



3. Uffe Kock Will, Mapping data in space



A Forensic Architecture: Architecture at the Threshold of Law

Forensic Architecture is a research organisation defined by Eyal Weizman's book *Forensic Architecture: Violence at the threshold of detectability*, Eyal Weizman being the director and founder of FA. The Forensic Architects, otherwise known as Counterforensic Specialists, manipulate the idea of Architecture as Evidence, into interrogation of the state – using the states own resources (i.e. Internet, transport networks, media services) against it – combining Open-Source Intelligence, and Architectural Theory.

Beyond Design Practise: The Forensic Architecture Manifesto

Forensic Architecture is rooted in the idea of 'the application of architectural facts, to legal problems'.²¹ Rather confusingly, Forensic Architecture is both an agency and a research practise, both defined in FA's mandate to 'develop, disseminate, and employ new techniques for evidence gathering and presentation', alongside Weizman's aforementioned book, which forms their manifesto.²² Instead of deep rooting their manifesto in Architectural Theory, Weizman turns to, a progressive evolution from Building Surveyors to Conflict Surveyors, and the definition of the Latin word 'Forensis', meaning 'pertaining to the Forum', differing to the approach of this dissertation, where I establish the theoretical Architectural framework (AIM), which gives FA narrative within Architectural Theory, beyond latching onto existing roles.²³

Weizman starts with Building Surveyors, which sometimes identify as Forensic Architects, although their definition is not the same. Situated within the corporate and contemporary building industry, their role is formulated around insurance infrastructure, providing evidence in actuary and litigation systems. This work allows Building Surveyors to evaluate 'damage yet to come – caused by the forces of man, nature, or, increasingly, their combinations'.²⁴ As seen with Edward Keegan's work at Architecture Magazine and ELB Forensic, this form of surveyor generally assesses 'the overall condition of an existing building's envelope: the roof, exterior walls, and foundations'. But they argue that 'just these "bones" of the building don't tell the whole story', recognising that buildings do record evidence wider to the application of insurance litigation.²⁵ Subsequently, they acknowledge and define buildings as recording instruments of external factors.²⁶ If AIM were a sliding scale between using Architectural Evidence for

21. Dale, Paeglow, 'Forensic Architecture, An Introduction' (Patterson, NY: Cromlech Architect, 2001), <<http://cromlech-architect.com/forensic-architecture>> cited in Weizman, Eyal, *Forensic Architecture: Violence at the Threshold of Detectability* (Brooklyn, NY: Zone Books, 2017)

22. 'Forensic Architecture → Agency' <<https://forensic-architecture.org/about/agency>> [accessed 1 March 2023]

23. Weizman, Eyal, *Forensic Architecture: Violence at the Threshold of Detectability* (Brooklyn, NY: Zone Books, 2017), p. 65

24. Ibid., p.51

25. Keegan, Edward, 'The Building Sleuths: Inside a Forensic Architecture Firm', Architect, 2009 <https://www.architectmagazine.com/design/the-building-sleuths-inside-a-forensic-architecture-firm_0> [accessed 2 November 2023]



4. Forensic Architecture: Violence at the Threshold of Detectability, overlaying OSINT in 3D Virtual Space for cloud study.

the Architectural Profession (1), and Interdisciplinary Forensic Analysis for a legal response (10), Building Surveyors would sit at 2, somewhere between not designing new structures using architectural evidence exclusively, but using architectural evidence to infer architectural responses.

Weizman makes the argument that Forensic Architects ‘invert phenomenology’s categories of perception and experience’. They are not completely concerned with ‘how we might experience a building, but rather, fundamentally, with how a building might experience its users’, and the extension of this to ‘built environments and larger territories[...] which [...] also act as political sensors to be read’. This allows Weizman to turn to Conflict Surveyors, those who challenge the ethos and argue that Forensic Architects ‘can exit the specialised framework of insurance disputes’, into urgent contexts like Armed Conflict. Weizman’s narrative links with OSINT, in that buildings hold a record of events (evidence) – like cracks forming from high impact explosions – and also that ‘the urban environment is highly sentient in both material, analogue, and digital terms[...] a dense media environment saturated by optical and other sensors’. When a conflict occurs, and people are moved or displaced – or generally become engulfed in the conflict – all the elements of a city start recording, buildings and their scars, plant life and their flattening as tanks roll over them, and air quality as vehicles rush in and out of spaces.²⁷ Not only this, but the very people displaced by conflict in the modern world record evidentiary information

26. Weizman, Eyal, *Forensic Architecture: Violence at the Threshold of Detectability* (Brooklyn, NY: Zone Books, 2017), p.52-53
 27. Weizman, Eyal, *Forensic Architecture: Violence at the Threshold of Detectability* (Brooklyn, NY: Zone Books, 2017), p.54; p.54 ;p.57; p.57; p.58

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5. Cracks in Palestine - Forensic Architecture

themselves as OSINT. This is the context which forms an ‘Evidence Assemblage’, with which Architecture becomes the ‘Primary Evidence’. It is the role of a Forensic Architect to ‘locate disparate bits of evidence and data,’ like scars in buildings captured in footage by displaced people, and formulate the relationship between them in time and space, amalgamating testimony and evidence, in a presentable way, understood by all. Thus we arrive, at a Forensic Architect, as Weizman summarises – ‘the imaginary gaze of a future archaeologist’.²⁸

Forensic Architects are regulated by Weizman’s analysis of the term ‘Forensics’, or ‘Pertaining to the Forum’, the origin of the word Forensics. Weizman strips back Forensics to its definition of original Roman oratories, and establishes a method of counterforensics, ‘turning the states own means against the violence it commits.’ In determining the three sites of Forensic operation: ‘the field, the laboratory [(the studio)], and the forum,’ Weizman deliberates that ‘the general aim[...], is to erode the difference between [these] domains’, and operate in a way which uses the sites to present evidence architecturally, using representation and investigation methods which the general public can understand. This regulation establishes the boundaries for which FA operates, an organisation with the bias of a ‘specific political reality’, but operating purely to expose truths and verification. ^{II, 29}

^{II} For more information on Forensics and Counterforensics see: Weizman, Eyal, *Forensic Architecture: Violence at the Threshold of Detectability* (Brooklyn, NY: Zone Books, 2017)

For more information on Counterforensics, start with: Keenan, Thomas, ‘Counter-Forensics and Photography’, *Grey Room*, 55, 2014, 58–77

For wider information on Forum and Architectural/Artistic endeavour of Legal contexts, see: Stuckey, Lisa, *Foren-sische Verfahren in den zeitgenössischen Künsten: Forensic Architecture und andere Fallanalysen* (De Gruyter, 2022) <<https://doi.org/10.1515/9783110732887>>

28. Weizman, Eyal, *Forensic Architecture: Violence at the Threshold of Detectability* (Brooklyn, NY: Zone Books, 2017), p.58-59; p.58; p.58

29. Ibid., p.64-65; 64-65; 66-68; p.68



6. The Killing of Mark Duggan, Via Forensic Architecture and The Guardian

The Killing of Mark Duggan: A Case Study

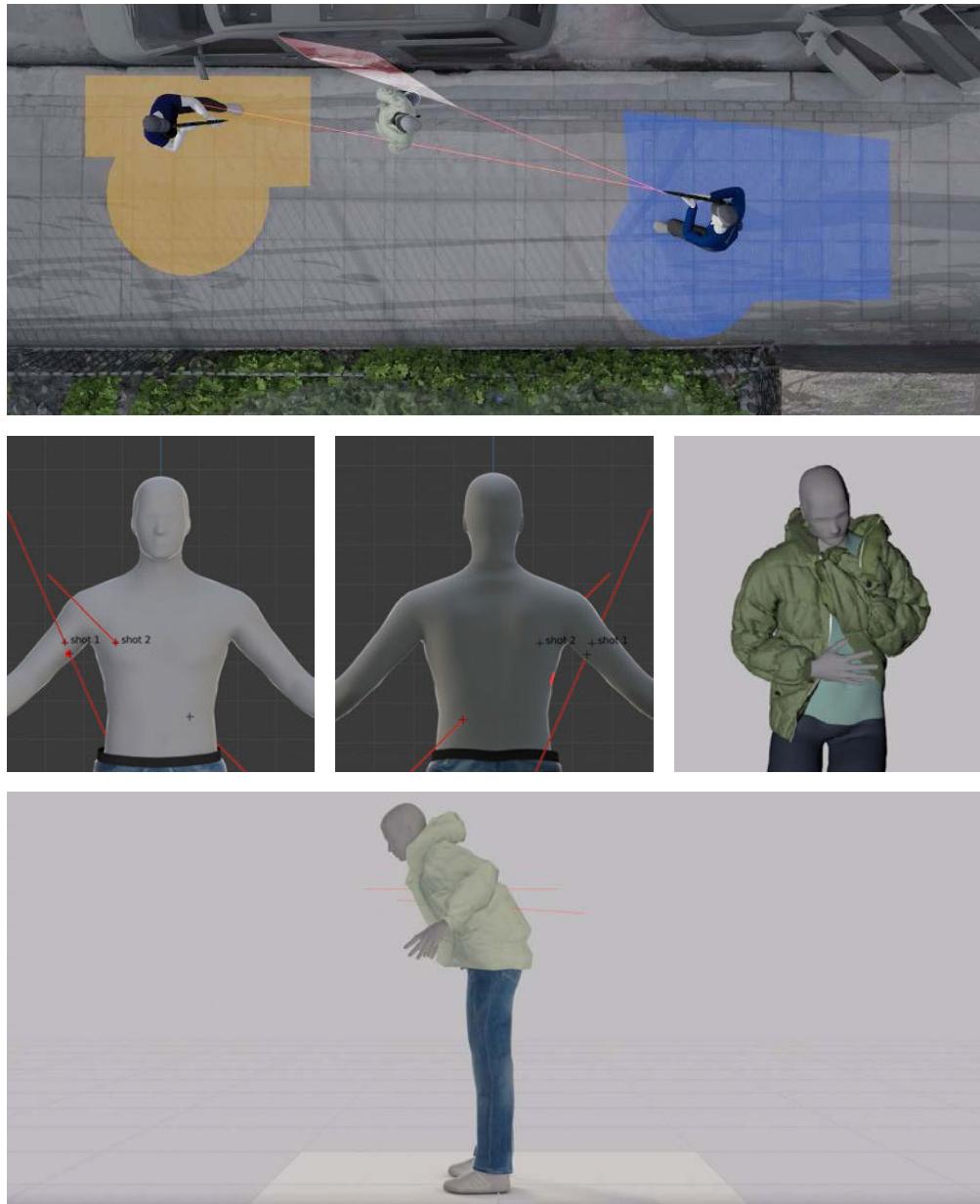
To demonstrate the framework of FA and how it operates, I analyse their London case of a Police-on-Civilian Shooting investigative report entitled: 2020.06-Report-The-Killing-of-Mark-Duggan.³⁰

On 4th August 2011, Mark Duggan was killed by an officer of the Metropolitan Police Service (MPS) in Tottenham, North London, following a 'hard stop' manoeuvre conducted by Operation Trident. The chain of events, which led to Duggan's eventual death, were long disputed, and it catalysed tensions in the local area; two days following the shooting, riots broke out across the country. FA were approached by Duggan's family lawyers as they filed a civil claim against the MPS, following an Independent Police Complaints Commission (IPCC) inquest which found that no wrongdoing was committed by MPS CO19 (Specialist Firearms) Officers. The main controversy surrounding the shooting of Duggan began after a police officer, identified as V53, fired two rounds toward Duggan, killing him and injuring another officer (W42), following the claim Duggan was known to be in possession of a firearm. Despite this, the gun V53 claimed Duggan to have, was found, 7 metres from Duggan's body, in a grass verge, 8 minutes following the incident. The intelligence question FA was commissioned to answer was 'How did the gun get to the grass?'³¹

30. 'The Killing Of Mark Duggan' <<https://forensic-architecture.org//investigation/the-killing-of-mark-duggan>> [accessed 2 March 2023]

31. Ibid.;
Architecture, Forensic, '2020.06 The Killing of Mark Duggan, 4th August 2011- Report and Methodology' (Centre for Research Architecture, Department of Visual Cultures, 2020);
Siddique, Haroon, Antonio Voce, Lydia McMullan, and Frank Hulley-Jones, 'Mark Duggan Shooting: Can Forensic Tech Cast Doubt on Official Report?', The Guardian <<http://www.theguardian.com/uk-news/ng-interactive/2020/jun/10/mark-duggan-shooting-can-forensic-tech-cast-doubt-on-official-report>> [accessed 12 November 2023]

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7. Bullet Projection Calculations

32. Architecture, Forensic, '2020.06 The Killing of Mark Duggan, 4th August 2011- Report and Methodology' (Centre for Research Architecture, Department of Visual Cultures, 2020), p.5; p.5; Siddique, Haroon, Antonio Voce, Lydia McMullan, and Frank Hulley-Jones, 'Mark Duggan Shooting: Can Forensic Tech Cast Doubt on Official Report?', The Guardian <<http://www.theguardian.com/uk-news/ng-interactive/2020/jun/10/mark-duggan-shooting-can-forensic-tech-cast-doubt-on-official-report>> [accessed 12 November 2023]

To investigate the case, FA drew from a series of evidence sources, including, ‘witness statements and transcripts of oral evidence, images, videos, forensic evidence, and expert analysis, including ballistic, biomechanics, and pathology reports,’ relating back to Farrell’s interdisciplinary argument. Due to the IPCC public inquest in 2013, the evidence surrounding the shooting was made public, via the national archives, which allowed FA to draw upon this form of OSINT. To answer their primary question, FA reconstructed the incidents’ environment in a model to piece together evidence which existed and the disputed chains of events. For example, CO19 officers did not wear body cameras, and so, the incident was unrecorded, as such, FA needed to reconstruct V53’s testimony, along with the other officers, in this environment, to verify it, and ensure proper conduct was upheld.³²

To begin incident reconstruction, FA examined Forensic Reports, Witness Reports and Officer Testimony to plot the locations and body positioning of Mark Duggan and the two officers, V53 and W42. They matched sightlines, bullet trajectories, and Forensic reports of Duggan’s clothing to the model. This determined that Duggan had his left hand in his pocket and gave an approximate movement for Duggan exiting the minicab, determined from a witness video and a video of a ‘hard stop’ manoeuvre released by the MPS previously. Further, this reconstruction presented that Duggan must have been holding the gun in his right hand for officers to see it and discharge their weapons. It also showed the sequence of the shots that were fired at Duggan. FA concluded that the first shot passed through Duggan’s bicep, and then struck W42, before Duggan was shot in the chest.³³ This method of analysis, interrogating evidence in stages in space, relates to Cullen’s Serial Vision, as FA take instances of Architectural Evidence, points in testimony, to evaluate the physical evidence before them.

Following FA’s reconstruction of the movements officers took, they were able to perform a series of simulations to determine whether Duggan had chance to throw the gun, or, whether there was probability it had been moved. Running the simulations, it was clear that Duggan couldn’t have thrown the gun without officers clearly seeing it pass through their Field of Vision. This led FA to turn to six videos, comprising of around 15 minutes’ worth of footage, captured by ‘Witness B’, who began recording approximately 40 seconds after the minicab came to a stop. Witness B was positioned in a high-rise residential building, recording at an angle to the incident, on the opposite side of the Minicab to Duggan’s body. This meant that there was a blind spot in the recording behind the vehicles, which officers could disappear into. Determining the blind spot of footage is much the same as shadow analysis, projecting a light from the angle of the camera location in the model, projects a shadow on the ground, behind the vehicles, an area of which officers could have accessed the minicab, to move the weapon.³⁴

33. Architecture, Forensic, ‘2020.06 The Killing of Mark Duggan, 4th August 2011- Report and Methodology’ (Centre for Research Architecture, Department of Visual Cultures, 2020);

Siddique, Haroon, Antonio Voce, Lydia McMullan, and Frank Hulley-Jones, ‘Mark Duggan Shooting: Can Forensic Tech Cast Doubt on Official Report?’, The Guardian <<http://www.theguardian.com/uk-news/ng-interactive/2020/jun/10/mark-duggan-shooting-can-forensic-tech-cast-doubt-on-official-report>> [accessed 12 November 2023]

34. Architecture, Forensic; Siddique, Haroon, Antonio Voce, Lydia McMullan, and Frank Hulley-Jones,

REDACTED



8. Gun Throw Scenarios 1 and 2



9. Image Stabilisation and Environment Referencing



10. Shadow-Blind-Spot Analysis

Analysing Witness B's footage further, FA used surrounding structures to stabilise the video and monitor where officers moved immediately following the shooting, up to the 8-minute mark after, when the gun was found. The IPCC claimed there was no chain of events which would have allowed officers to move the gun to the grass, however, FA contested this. Tracking officers in and out of the blind spot as they interacted with one another, FA produced a timeline and matrix showing potential collection and passing of the weapon, until it was found on the grass. FA also acknowledged a ~4 second gap within the footage that the IPCC had failed to identify and determined that some officers had opportunity to transfer the weapon during this time.³⁵

Forensic Architecture's Investigation used a series of architectural methods to come to its conclusion. These include: the use of shadow analysis to determine blind spots; the use of the urban environment as a recording instrument of evidence for spatial reconstruction; the modelling of the area to produce plans of the incident to better present the case; and the application of the model in a simulation to rule out the possibility of Duggan throwing a weapon. FA also used graphical methods of representation, to better present the case, including the use of cross-referenced timelines, overlayed imagery and models, plan drawings, and videography, which make for better arguments than non-visual, verbal testimony presented by officers, as people can follow them more easily. These techniques all employ core theories within architecture such as Serial Vision in which instances of time within urban space can be translated into graphical forms of representation, using architectural techniques, drawing on interdisciplinary approaches to Forensic Investigation.

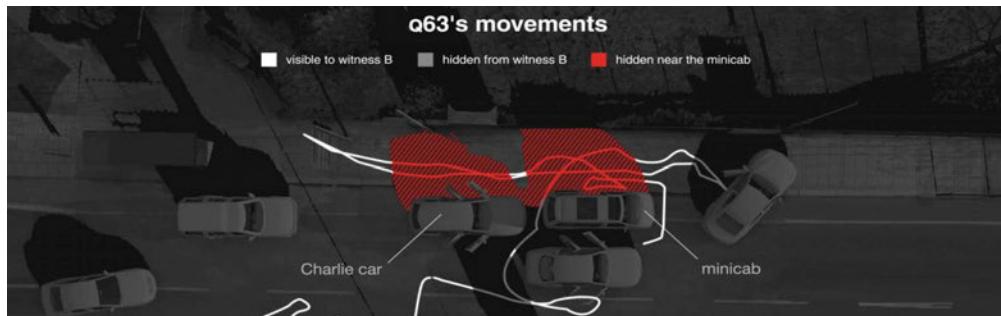
FA's expert testimony in the pre-trial for the civil claim at high-court led to a confidential out-of-court settlement in the case, in which the MPS refused to accept liability, but did provide the family with compensation and an 'agreed position', on Tuesday 17th September 2019.³⁶ This proves the tangibility and acceptance of architecturally-led Forensic Analysis, and certifies it as a reliable source of evidence, producing a narrative of incidents within space.

³⁵. Architecture, Forensic, '2020.06 The Killing of Mark Duggan, 4th August 2011- Report and Methodology' (Centre for Research Architecture, Department of Visual Cultures, 2020);

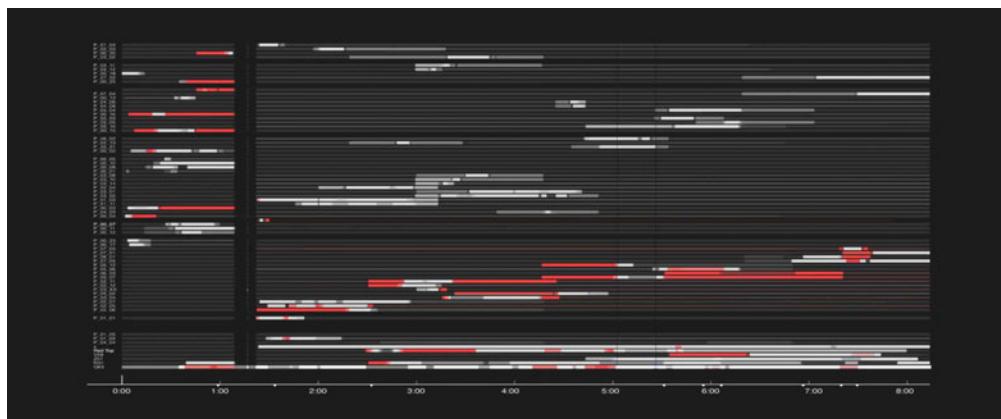
Siddique, Haroon, Antonio Voce, Lydia McMullan, and Frank Hulley-Jones, 'Mark Duggan Shooting: Can Forensic Tech Cast Doubt on Official Report?', The Guardian <<http://www.theguardian.com/uk-news/ng-interactive/2020/jun/10/mark-duggan-shooting-can-forensic-tech-cast-doubt-on-official-report>> [accessed 12 November 2023]

³⁶. 'Settlement for Mark Duggan, High Court. - a Freedom of Information Request to Metropolitan Police Service (MPS)', WhatDoTheyKnow, 2019 <https://www.whatdotheyknow.com/request/settlement_for_mark_duggan_high> [accessed 12 November 2023]

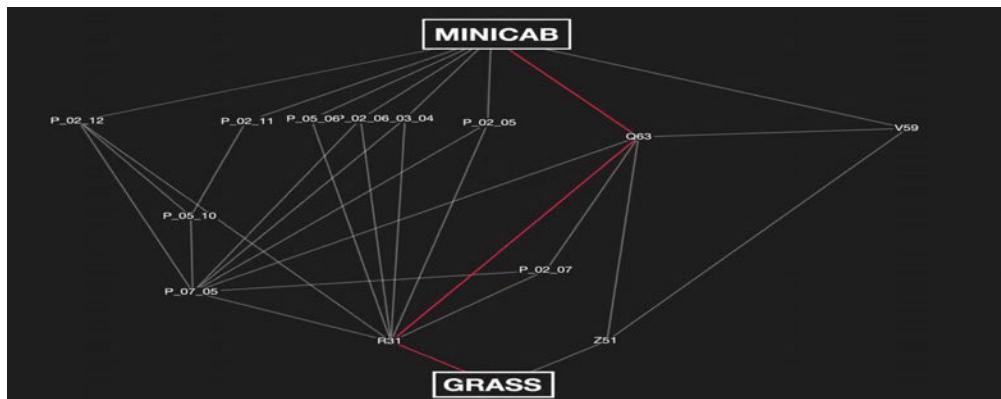
REDACTED



11. Officer Q63 Movements



12. Timeline



13. Matrix of Gun Pass

Terror Space: Spatial Surveillance and the Invasion of Privacy

Following from this recognition of Architectural Forensics, an issue arises as we identify two ideas: FA is a viable and reliable source of evidence processing, but also the practise of FA, is freely accessible to learn, using open-source software. Through the Mark Duggan Case, FA made use of Open-Source software like ‘Blender and MakeHuman,’ alongside other proprietary software, and they made use of mostly open-source information.³⁷ Whilst FA is useful for holding states accountable, and opening human-rights incidents to scrutiny, it can also be used for nefarious means, creating a Terror Space, one in which Forensics is used as a weapon against privacy, a state of spatial surveillance.

As ‘concentrated spaces of political subjectivities’, develop, the people within grow more connected, outlined in ME++ and described as ‘wireless bipeds’, peoples’ ‘networks extend ever outward’.³⁸ Interconnected beings, interact with one another, and the internet – continuously growing comfortable sharing their private experiences in the globalised world. This ‘comfort space’ people have created for themselves creates a state with ‘large-scale collection, processing, and use of data on individuals’ lives’, in which people are happy to share their most secluded events on platforms.³⁹ Social media and messaging apps have moved front and centre, and the input of personal information into these websites and services reinforces this engagement with the globalised forum. People enter a regime of sacrificing privacy for convenience, satisfaction, and interaction. Although there are legal powers to protect people from intrusion into accessing personal data physically – and even in some cases digitally – people now present more of this information voluntarily in the Open-Source forum. This presents three hostile forces: the state, institutions, and the stalker.

The first dilemma: the state; the very force Forensic Architecture is designed to combat, commonly possesses significant surveillance powers, in the name of ‘defence of the state and the ‘homeland’, the prevention and active policing of crime, traffic and transport management, immigration management’, and the likes. State surveillance has ever existed in forensic technologies, the embedding of individuals in organisations or private spaces, wiretapping, and listening devices, but they require some form of warranting and oversight, and by definition, ‘surveillance, watching must have a point, an objective’.⁴⁰

As Forensic Architecture, AIM, OSINT, Open-Source Software, and the internet all become interconnected, the boundary between surveillance with purpose, and mass-surveillance becomes blurred. The connected Comfort Space created by people is not the enjoyable space people think it is, in fact, it opens people to surveillance by their states, and other states, on a massive

37. Architecture, Forensic, ‘2020.06 The Killing of Mark Duggan, 4th August 2011- Report and Methodology’ (Centre for Research Architecture, Department of Visual Cultures, 2020)

38. Gath, Benjamin, ‘Concentrated Spaces of Political Subjectivities: How Politics Shapes Dense Urban Developments.’ (unpublished essay, B-Arch Stage 2, Newcastle University, School of Architecture, Planning and Landscape, 2023), p.1;

Mitchell, William John, *Me++: The Cyborg Self and the Networked City* (Cambridge, Mass. London: MIT, 2004), p.41

39. Ball, Kirstie, Kevin D. Haggerty, and David Lyon, eds., *Routledge Handbook of Surveillance Studies*, Routledge International Handbooks, Paperback (London and New York: Routledge, 2014)

40. Ibid., p.162; p.162

REDACTED

scale, allowing governments, in the vein of national security, to monitor their citizens without any formal legal request. Pairing the techniques of Forensic Architecture with automated Artificial Intelligence processes, the state then has the resources to track people, everywhere. Not only do they have access to their extensive camera networks, but they then have access to the countless recording devices held by a person at any one time, and they can geo-locate these using the surrounding environment, all at the upload of a video or image. States can infer movements, behaviours, future-plans, past experiences, and conversations metres away from a camera, microphone, or internet search. And the depth of the intelligence doesn't stop at the front door, as people invite their devices inside, they access their conveniences, and they publish their data. States can monitor citizen's mental status as they assess google search frequencies in given locations and read Netflix 'watched near you' data; they can assess household size and furniture to determine a persons' net worth from home videos; they can monitor internet traffic through neighbourhood servers using speed test Softwares tracking frequencies to a toilet as people sit and scroll; they can use national grid statistics to monitor the frequency somebody boils a kettle or cooks food, and these examples just scratch the surface, as the techniques grow and develop the invasion of privacy grows exponentially.

However, the integration with the Open-Source surveillance network doesn't have to be voluntary. The most diligent – non-technical people – are integrated into the network of spatial surveillance without ever needing to interact directly with it. The connectedness of people throughout society means that as a stranger uploads a photo to X taken on the high street, the person 60 metres away immediately is dragged into the network, and their distinctive red jacket can be seen in the reflection of a bus window 10 minutes up the road, and again, 20 minutes away in the local corner shop photographing produce for their 'next big deal'.

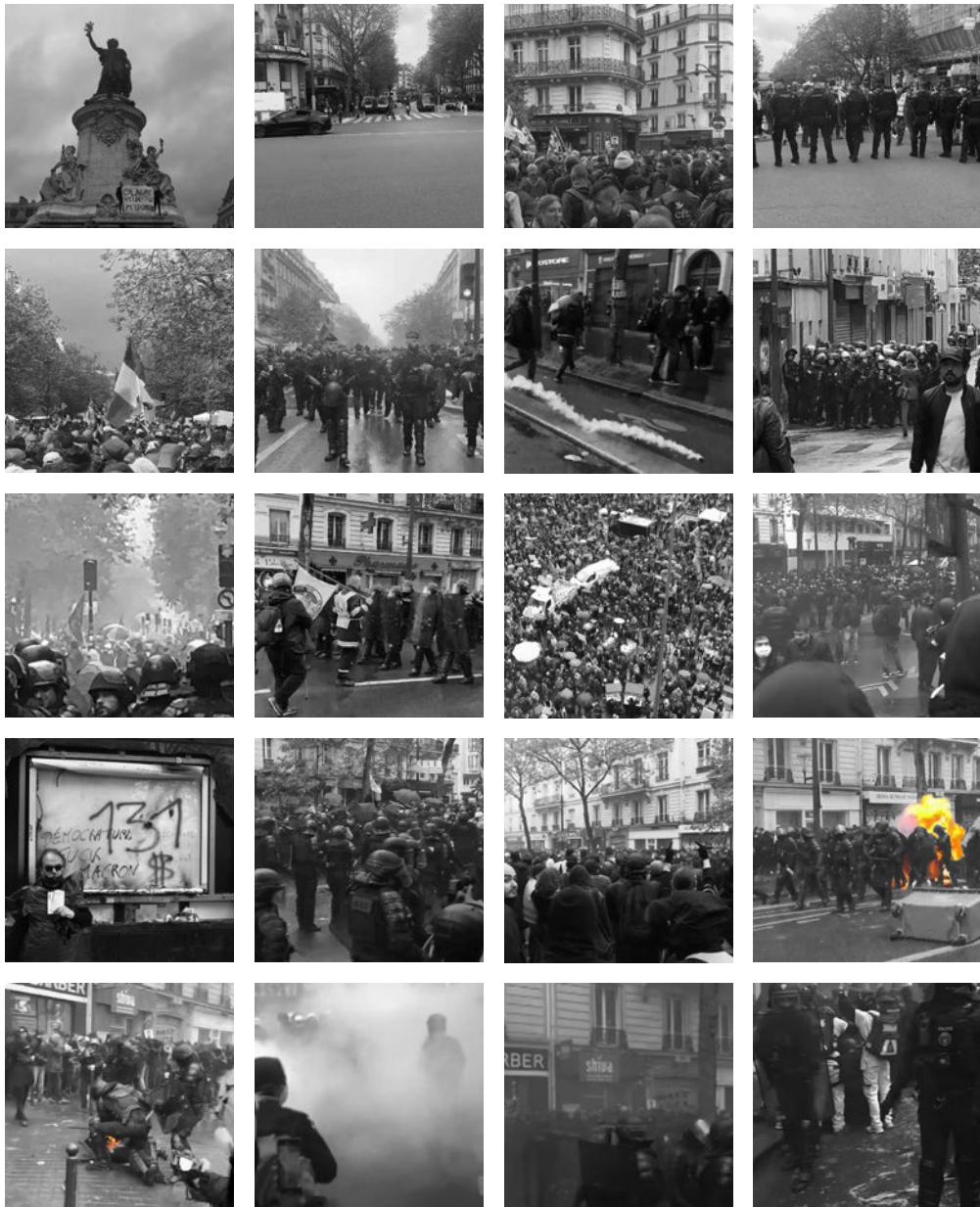
Perhaps the most concerning realisation in this argument is that this is Open-Source. Whilst the state has the opportunities and resources to implement this on a massive-automated scale, on a more national, or even individual scale, institutions, organisations, and individuals can tailor this intelligence and these techniques more directly. The very organisations which publish OSINT are publishing it because they are collecting it and processing it, tracking people, and hooking them into their eco-systems. They convert Comfort Spaces into Terror Spaces; spaces which work against those within them by stacking up OSINT and creating profiles of their lives, where they live, where they work, when they wake up, when they go to sleep. Google can push advertisements tailored to what websites you've recently visited or places you've been to, and Cambridge-Analytica can push Facebook posts based on your online data, to influence elections.⁴¹ The stalker can track

geo-located posts in the restaurant to check your meal order and which shops you've visited with the bags by your side, plotting this to monitor your movements through the adjacent shopping centre using open-source modelling software.

Increasingly, the danger of Open-Source data and techniques is breaching the privacy expectations of people in the globalised world and opening them to constant surveillance, no matter the forum they're in. Whilst Forensic Architecture is useful in creating spatial worlds to plot evidence of human rights violations, its nefarious application of overlaying thousands of streams of digital data on a virtual world, means every instance of the connected world is tracked, voluntarily or not. This is the Terror Space.

41. Choudhary, Vidhi, 'Google's Legal Issues Are Piling Up', TheStreet, 2022 <<https://www.thestreet.com/technology/google-sued-for-allegedly-tracking-your-location-data-lawsuit>> [accessed 12 November 2023];
Cadwalladr, Carole, "'I Made Steve Bannon's Psychological Warfare Tool': Meet the Data War Whistleblower', The Guardian, 18 March 2018, section News <<https://www.theguardian.com/news/2018/mar/17/data-war-whistleblower-christopher-wylie-facebook-nix-bannon-trump>> [accessed 12 November 2023];
Cadwalladr, Carole, and Emma Graham-Harrison, 'Revealed: 50 Million Facebook Profiles Harvested for Cambridge Analytica in Major Data Breach', The Guardian, 17 March 2018, section News <<https://www.theguardian.com/news/2018/mar/17/cambridge-analytica-facebook-influence-us-election>> [accessed 12 November 2023];
Cadwalladr, Carole, and Peter Jukes, 'Arron Banks "Met Russian Officials Multiple Times before Brexit Vote"', The Observer, 9 June 2018, section Politics <<https://www.theguardian.com/politics/2018/jun/09/arron-banks-russia-brexit-meeting>> [accessed 12 November 2023]

REDACTED



14. Labour Day Protests, Exhibit K

⁴² Paone, Antony, Dominique Vidalon, and Ingrid Melander, 'Huge Crowds March across France, Raising Pressure against Macron's Pension Reform,' Reuters, 31 January 2023, section Europe <<https://www.reuters.com/world/europe/france-braces-second-partial-strike-against-pension-reform-2023-01-31/>> [accessed 3 January 2024].

⁴³ González, Sara, 'A Year of Crises for Macron: Pension Reform, Protests in the Banlieues and the Immigration Law', EL PAÍS English, 2 January 2024, section International <<https://englishelpais.com/international/2024-01-02/a-year-of-crises-for-macron-pension-reform-protests-in-the-banlieues-and-the-immigration-law.html>> [accessed 2 January 2024]



Protest or Riot; Democracy or Regime

The Labour Day Protests

The French Pension Reform protests started peacefully on 19th January 2023, after President Emmanuel Macron, and Élisabeth Borne's Government, introduced plans to raise the retirement age across France from 62 to 64.⁴²

Macron considered this move 'vital' to ensuring the viability of the pension system across France, however, its effects were still being felt in January 2024, as people deterred against adding six trimesters to their working lives and being forced into accepting pensions later in life.⁴³

Protests were held nationally, the most significant of which, were the Labour Day protests of May 1st 2023. Unions claimed these to be the biggest Labour Day protests in 30 years, stating 2.3 million people took to the streets (disputed by the French interior), and 112,000 people protesting in the capital, Paris.⁴⁴

With the day being a national holiday in France, such high numbers of protestors were expected however the high number of Black Bloc Anarchists and Radical Groups weren't as expected, leading to a rare number of 108 police officers being injured and 291 people being arrested.⁴⁵

The protests began at Place de La Republique, moving South-East down Boulevard Voltaire, to Place de La Nation; The majority of protests on the day were contained to the 11th arrondissement of Paris, along this route.

44. 'More than 400 French Police and Gendarmes Injured in May Day Protests'. The Local France, 1 May 2023 <<https://www.thelocal.fr/20230501/clashes-across-france-as-protesters-take-to-the-streets-on-may-day>> [accessed 2 January 2024];

'France Protests: More than 100 Police Hurt in May Day Demonstrations', BBC News, 1 May 2023, section Europe <<https://www.bbc.com/news/world-europe-65449777>> [accessed 2 January 2024]

45. Ibid.



15. Exhibit A-1

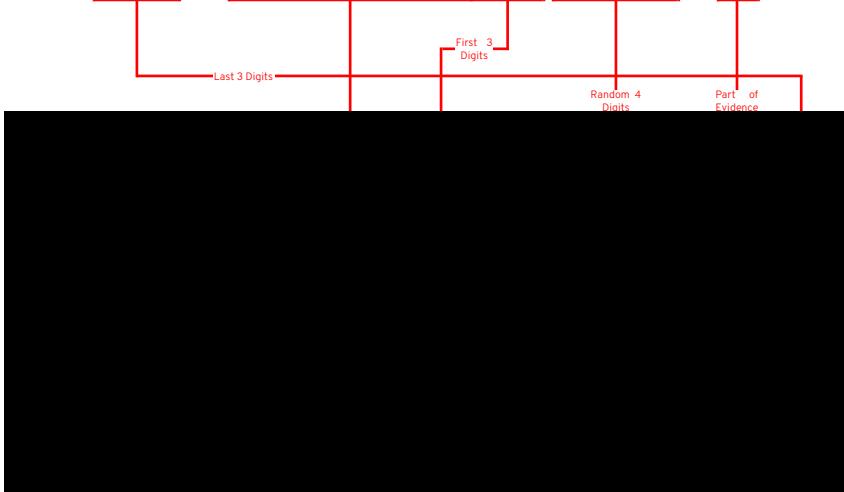
The Descent to Riot: Analysing Architectural OSINT Evidence

The Labour Day protests began peacefully, with much evidence showing protestors moving in an organised fashion down Boulevard Voltaire. As the protest persisted throughout the day, cracks in police practise and the sheer number of protestors, raised tensions, and violence erupted, resulting in explosions from fireworks and petrol bombs, buildings being set ablaze, waste bins used as battering rams and set alight, and physical violence inflicted on both sides of the conflict.

Perhaps the most harrowing imagery released by media outlets was that of Police Officers becoming engulfed in flames as protestors hurled incendiary devices at them. [REDACTED] – a French media outlet – released footage of one particularly distressing incident where several officers became engulfed in flames (Exhibit-A).⁴⁶ Other reports from wider media outlets revealed that an unnamed officer ‘suffered serious burns to his hands and face after being hit by a petrol bomb’.⁴⁷ Although it is unconfirmed to be the officer in this particular footage, the consequences of petrol bombs becomes evident. This moment during the protest forms the primary evidence around which I will explore the creative practise of FA to preliminarily analyse the events which led up to this incident. It is important to recognise that FA is a Practice which operates on a large scale and scrutinises evidence with intensity to stand inquiry in criminal courts. As such, this is not a determinative investigation into the perpetrators of

[REDACTED]
[REDACTED]
47. Chrisafis, Angelique, ‘At Least 108 Police Injured and 291 Held in May Day Protests in Cities across France’, The Guardian, 2 May 2023, section World news <<https://www.theguardian.com/world/2023/may/01/police-fire-teargas-on-may-day-protesters-in-cities-across-france>> [accessed 4 January 2024]

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16. Archival Management System

violence in the May 1st protests, but rather a practical exploration, of Forensic Architectural techniques, which could, in theory, be analysed as a basis for investigating a line of inquiry to the point of legal intervention.

Beginning the application of FA's techniques, I needed to collect OSINT from various sources around the time and location of the primary evidence. To do this, I needed to establish a method of archiving which ensured I had constant non-rewritable access to the OSINT in question. This involved establishing ethical rules such as using non-specific identifiers for people in videos, and the blurring of faces in video. Alongside this, all referenced evidence needed to be downloaded and saved as 'Read-Only'. Using an excel spreadsheet, each piece of evidence was recorded, meeting the digital standards of the UK Justice system referenced earlier. This created a unique code which became the reference name for the specific piece of evidence throughout the study, and which could be paired to an exhibit code. As an example, Exhibit-A, the video produced by [REDACTED], was referenced as: 027 - 04012023QG 2336 - A. This establishes the reference system throughout the following study; subsequently how evidence was recorded – ensuring a clear chain of custody for further examination and providing non-discrimination between generated evidence (i.e. FA Investigation) and found evidence (i.e. OSINT).

REDACTED

Following the creation of an archival system, it was paramount to begin sourcing evidence. For this I searched through X (formerly Twitter), Facebook and YouTube. One challenge I found when researching evidence, was that of language. Many individuals in the crowds were native French speakers and as such, using search terms like [REDACTED] only took me so far. Instead, I had to use common hashtags or search terms which were included in the early research. Some of my key search terms were [REDACTED]. These terms, coupled with Boolean search like 'AND', 'OR' allowed me to filter evidence quickly. Cross-referencing videos also became helpful when the likes of live streamed video was used. Some websites, like YouTube, don't record precise timestamps, however, when these streams were cast to Facebook, timestamps were collected. This can be seen in the example, where the timestamp is displayed more precisely on Facebook as opposed to YouTube.

In determining and searching for relevant evidence, I had to simultaneously verify it. On the one hand, I had to conduct succinct visual verification, this involved roughly analysing whether the surroundings were as they should be – notably, French and in a protest. However, on the other hand, I had to be more exact in my understanding of the location and time of the event which had been captured. To do this I took advantage of the Open-Source software Google Earth. Google Earth provides both 3-Dimensional models of environments and Street Level Imagery. Analysing the background of videos and imagery allowed me to identify key 'Landmarks'; this could be a shop window, paint marking on the ground, or adjoining junction on the road. Using Google Earth Street View, I then searched down Boulevard Voltaire, and verified the location of the video in question.

Exhibit B shows two compagnie d'intervention officers immediately following the incendiary incident in Exhibit A, one is still in flames and is central in the video, the other can be observed receiving medical attention in the background on the right-hand side. Using a similar technique to FA where they stabilised the footage, I can cross-reference between two video feeds and Google Earth Street View to verify they took place in the same area. To do this, I can mark notable background information, and then identify this in other footage. In the background of the footage in Exhibit B, the R.B. Barber frontage can be identified and paired with the footage from Exhibit A. This provides me with verification that these incidents occurred in the same area. Referencing Google Earth Street View, I then identify the R.B. Barber building on Boulevard Voltaire, ensuring the footage matches other notable landmarks. As I compare these series of images to Google Earth, I can then annotate Google Earth's 3-Dimensional Model, using the 'Projects' tab. This allows users to drop 'pins' on the map, and input information into these pins. This format of working allows me to generate a second, tangible archive; this archive is one which can be explored and experienced both through data and a virtual environment.



17. Navigating OSINT



18. Comparing Exhibit A, Exhibit B and Google Earth Street View



19. Creating a tangible archive

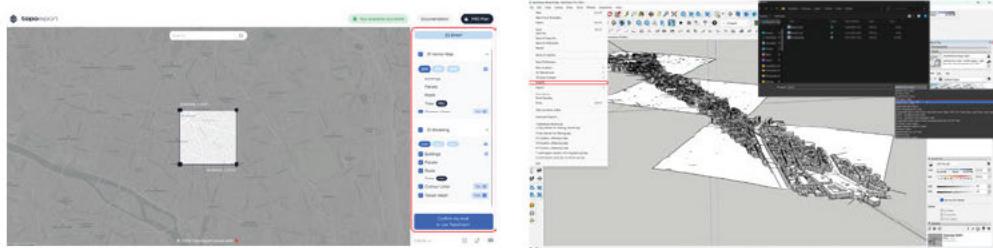
REDACTED

I now needed to verify that the two videos show footage captured in sequence with one another. To do this, analysing the plan view of the street directly adjacent to the R.B. Barber building is useful. To generate this view, I created a Sketchup model of Boulevard Voltaire. Topoexport.fr is an open-source modelling software which generates accurate 3-Dimensional models of France. This can then be imported into Sketchup. Sketchup is a proprietary software. Despite this, an older version of Sketchup, Sketchup Make 2017 is available open-source. Much like FA's application of Blender – a true open-source software – this tool is used to model environments and perform simulations like sun-path analysis.

After creating a basic model of the environment, I exported a plan view, and mapped the people I tracked in Exhibits A and B including the officer in flames seen fleeing toward the R.B. Barber shopfront and the second officer in flames seen falling to the ground. I then map the location of the camera in the environment as the scene progresses again, using FA's Witness B methodology. I apply this same technique of examination to determine a relative location for Exhibit C.

Exhibit C is a livestream video showing how the events of Labour Day unfolded from several viewpoints. Beginning at 12:06, it captures the moment the incendiary device explodes next to the officers, along Boulevard Voltaire at approximately 14:06 according to the timestamp of the video: 02:00:22. █

█ had several Journalists and Reporters along the street between the two squares, and as such switched streams several times. This indicates that the stream of the video is delayed slightly to allow the broadcaster chance to review footage and play it in its entirety. As such the time of the video needs verifying. Despite this potential disruption, the chronology of the incident is maintained throughout the stream – as verified through comparison to Exhibits A and B. Moments prior to the incendiary incident, at Timestamp: 01:55:54, in Exhibit C, outside the store Copy-Top, a shadow from a tree is cast directly toward the camera (Exhibit C-1). Recreating this scene in Sketchup, using basic forms, alongside reference measurements from Google Earth, allows for a shadow analysis study. Within Sketchup I overlay a Scene Watermark containing the screengrab from the video. Using the zoom tools, I modify the Field of View, until the footage matches the model. I then modify the shadow tool, matching the date as May 1st, and then adjusting the time toggle. This replicates the general idea of a sun dial, as the model calculates the sun position, it projects a shadow on the ground, which aligns with the video footage and gives an estimated time. The time calculation for this projection is approximately 13:53. This screengrab is captured 4 minutes and 28 seconds prior to the incendiary incident, which means the incident occurs between 13:58 and 14:06, a time difference of 8 minutes.



20. Exporting a model from Topoexport.fr

21. Importing a model of Boulevard Voltaire

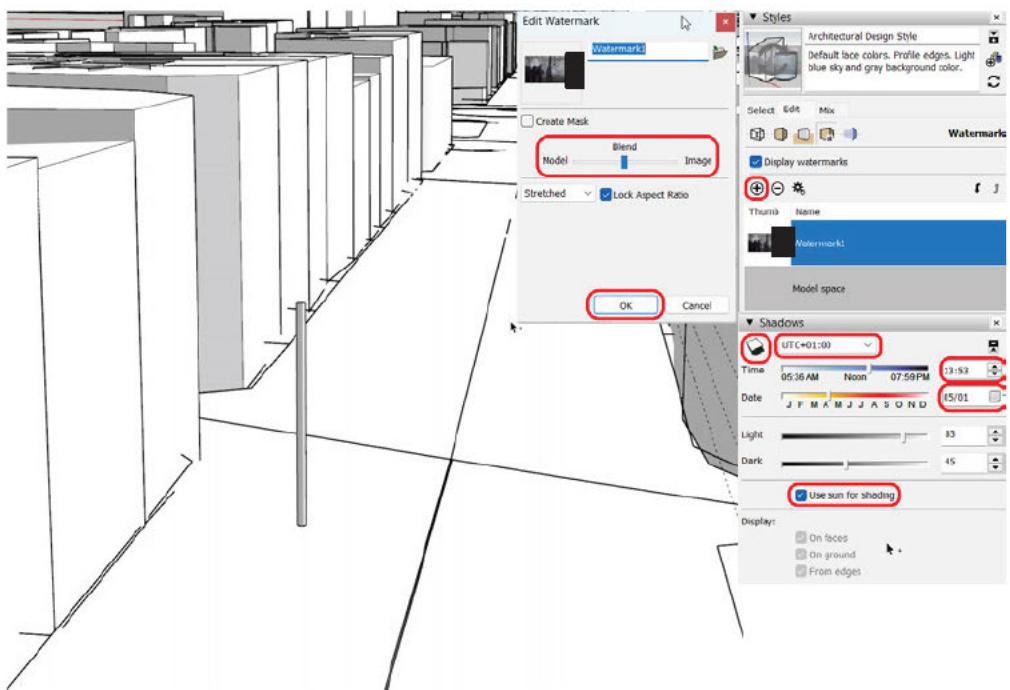


22. Mapping Officer Movements to determine sequence

REDACTED

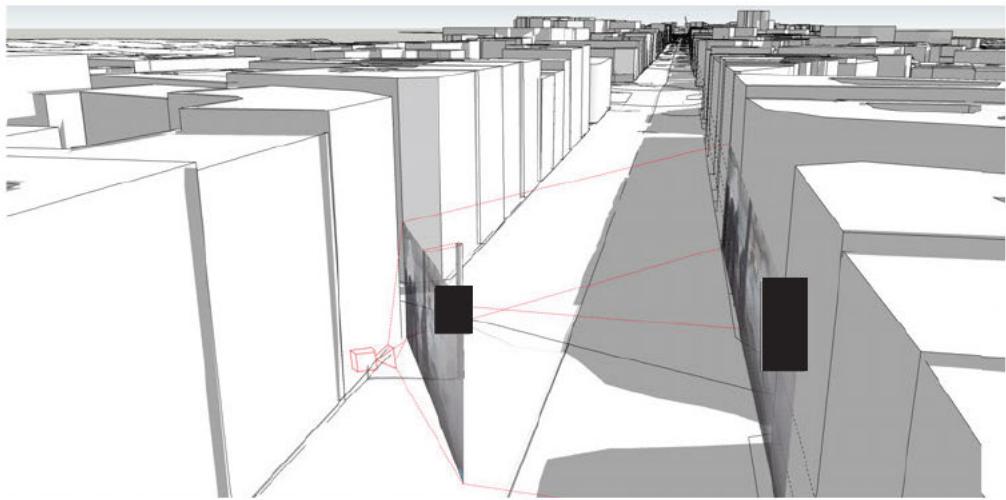


23. Exhibit C-1



24. Modelling the tree, and overlaying Exhibit C-1

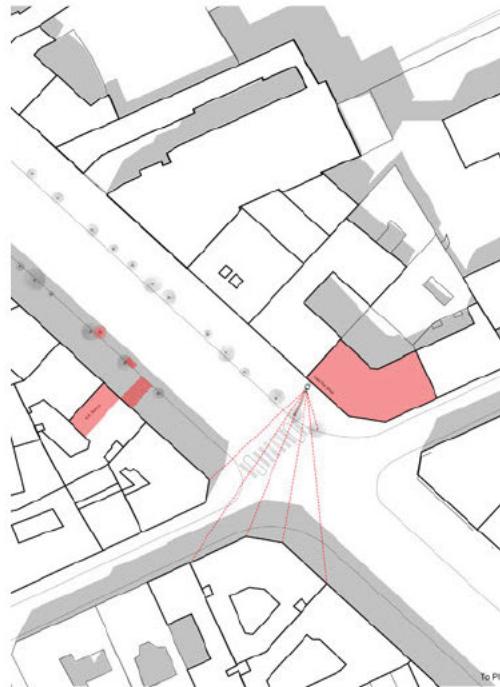
REDACTED



25. Exhibit C-1 alignment

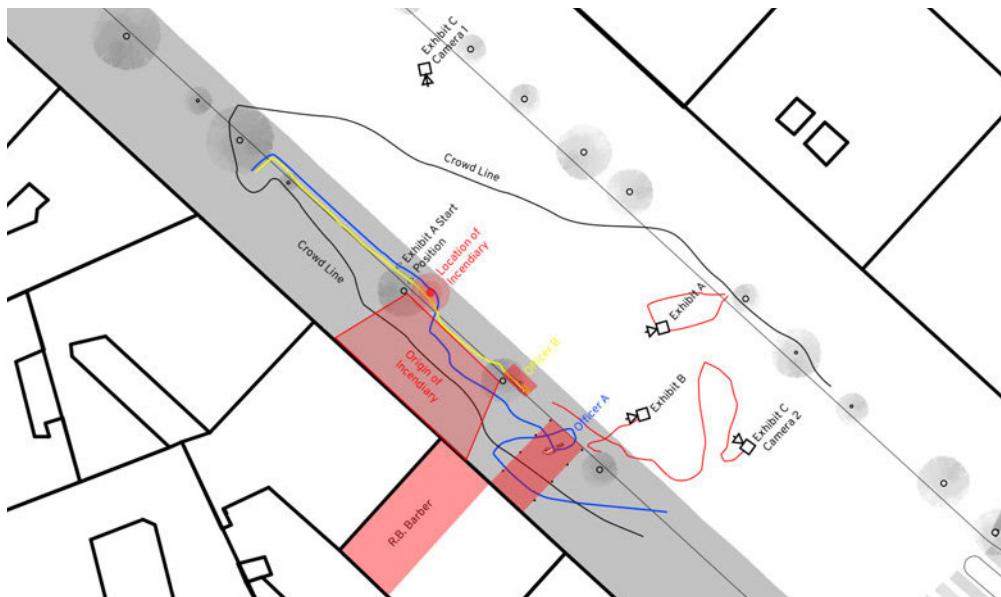


26. Exhibit C-2, Intersection of shadows in Sketchup with Exhibit C-1



27. Plan View of Exhibit C-1 Location

REDACTED



28. Plotting the throw origin of the incendiary

The final method of OSINT interrogation which contributed to the presentation of this case, involved again the analysis of Exhibit A.

Using VLC Media Player, I play the video back frame-by-frame, extracting each as I go by taking a snapshot. From this, I can view the explosion pattern of the petrol bomb as a timeline of images (Exhibit A-2). Treating the flaming explosion as a cloud, I can further FA's cloud study analysis, to determine an estimated origin on the ground, of the bomb.⁴⁸

I annotate each frame and draw projection lines from the outermost points of the cloud to the base of the explosion, where these lines intersect indicates the origin of the explosion – verifiable by the brightness of the explosion, in the frames, at this point, dissipating as time progresses.

Interrogating this further, examining the beginning of the video and the positioning of officers at the time, in plan Exhibit A-3, I can produce an approximate origin in the crowd, from where the bomb was thrown.

48. 'The Beirut Port Explosion: The Welders' <<https://forensic-architecture.org//investigation/the-beirut-port-explosion-the-welders>> [accessed 17 January 2024]



29. Examining the incendiary explosion in series to determine an origin

REDACTED

Presenting A Case

Through my consideration of FA's techniques, I examined roughly 100 hours of OSINT, and collected and preserved 13 hours and 53 minutes worth of footage. As such, it is important to consider the best approach to present the narrative of these events, which best explains how a peaceful protest descended to the point where two officers became engulfed in flames.

Exhibit D sets precedent for the protest environment; beginning at 11:29 on 1st May, the camera moves through the protest, approximately 30 minutes walking pace, ahead of the cameras in Exhibit C. This particular footage gives the opportunity to identify key actors who participated in the protest on behalf of the state. Through a series of snapshots, in Exhibit D-1, I identify the two State Security agencies which were deemed responsible for managing the peace along Boulevard Voltaire: The Gendarmerie Nationale and Police Nationale. The Police Nationale are the French urban Police Force, the Gendarmerie Nationale are a French military police force, with jurisdiction over civilians, when carrying out public order missions.⁴⁹ State Security was co-ordinated and extreme in its response leading up to the Labour Day protests, with the Ministry of the Interior ensuring that a sizeable number of officers were on the ground before protestors, as seen in the footage.

Exhibit D-1 is also critical in exposing the tactical setup with which the two state forces operated. Officers formed protective barriers along surrounding streets, and then established 'checkpoints', breaking the crowd into segments and moving the protest at a specific pace.

Exhibit I forms the next reference for understanding the location of footage in relation to the time it was captured. The timeline declares at which points Incidents occur, as highlighted in the Incident Log Table, and Exhibit J.

Referring back to Gordon Cullen's Serial Vision, I next choose to present the events of the May 1st Labour Day protests using a series of points in time, slides, which demonstrate at a specific point, an incident occurring. I do this using Exhibit J and the Incident Log Table, which work to present the same information, both in space and time.

49. 'France | OSCE POLIS' <<https://polis.osce.org/country-profiles/france>> [accessed 11 January 2024]; 'French Gendarmerie', NATO Stability Policing Centre of Excellence <<https://www.nspcoe.org/about-us/sponsoring-nations/french-republic/french-gendarmerie/>> [accessed 11 January 2024]



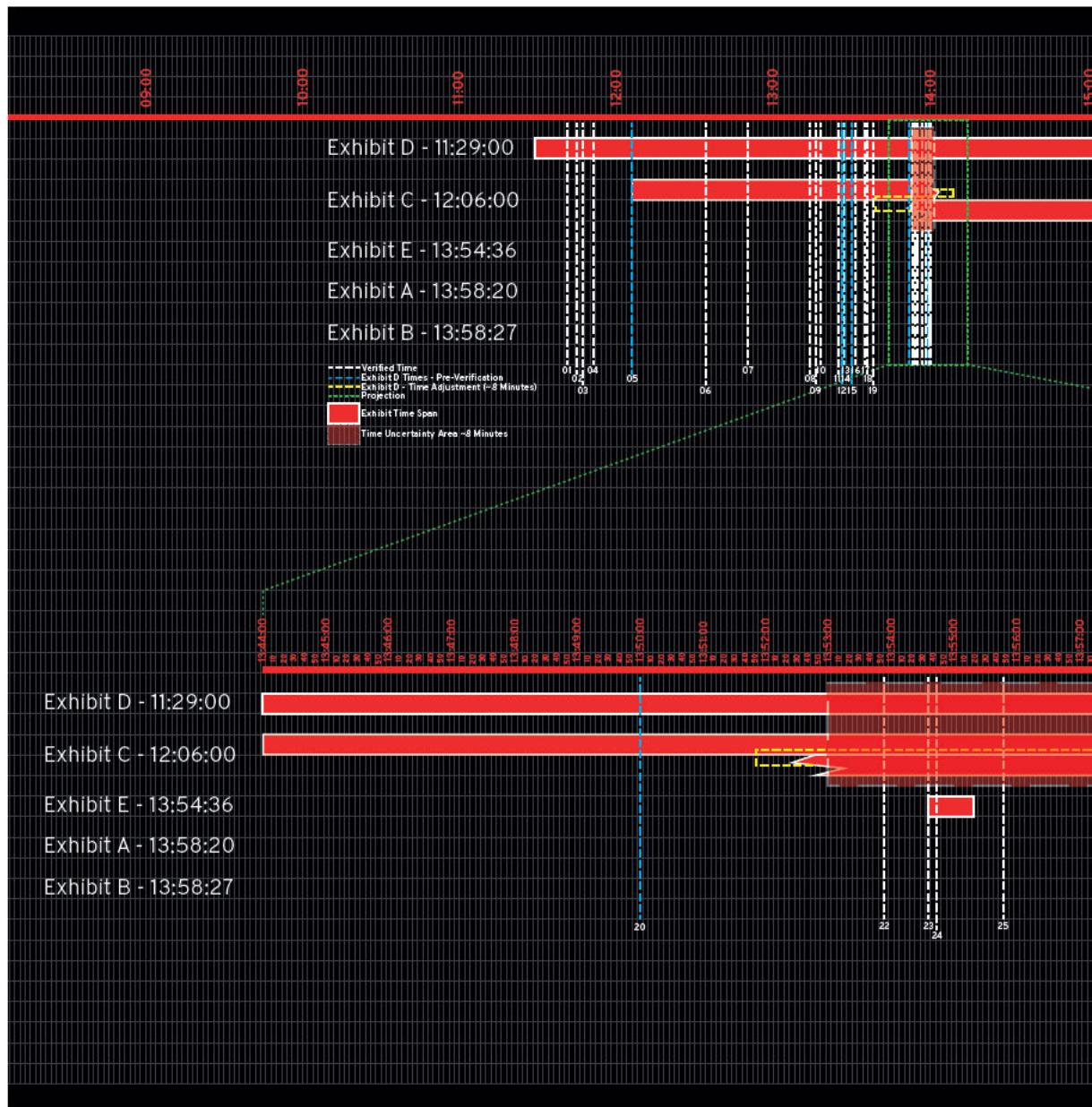
Exhibit D-1

Top: 30. Gendarmerie in Place De La Republique

Middle: 31. Split Panorama showing heavy police presence at intersection with Boulevard Voltaire and Rue Oberkampf at 11:47am, 2 hours prior to incendiary

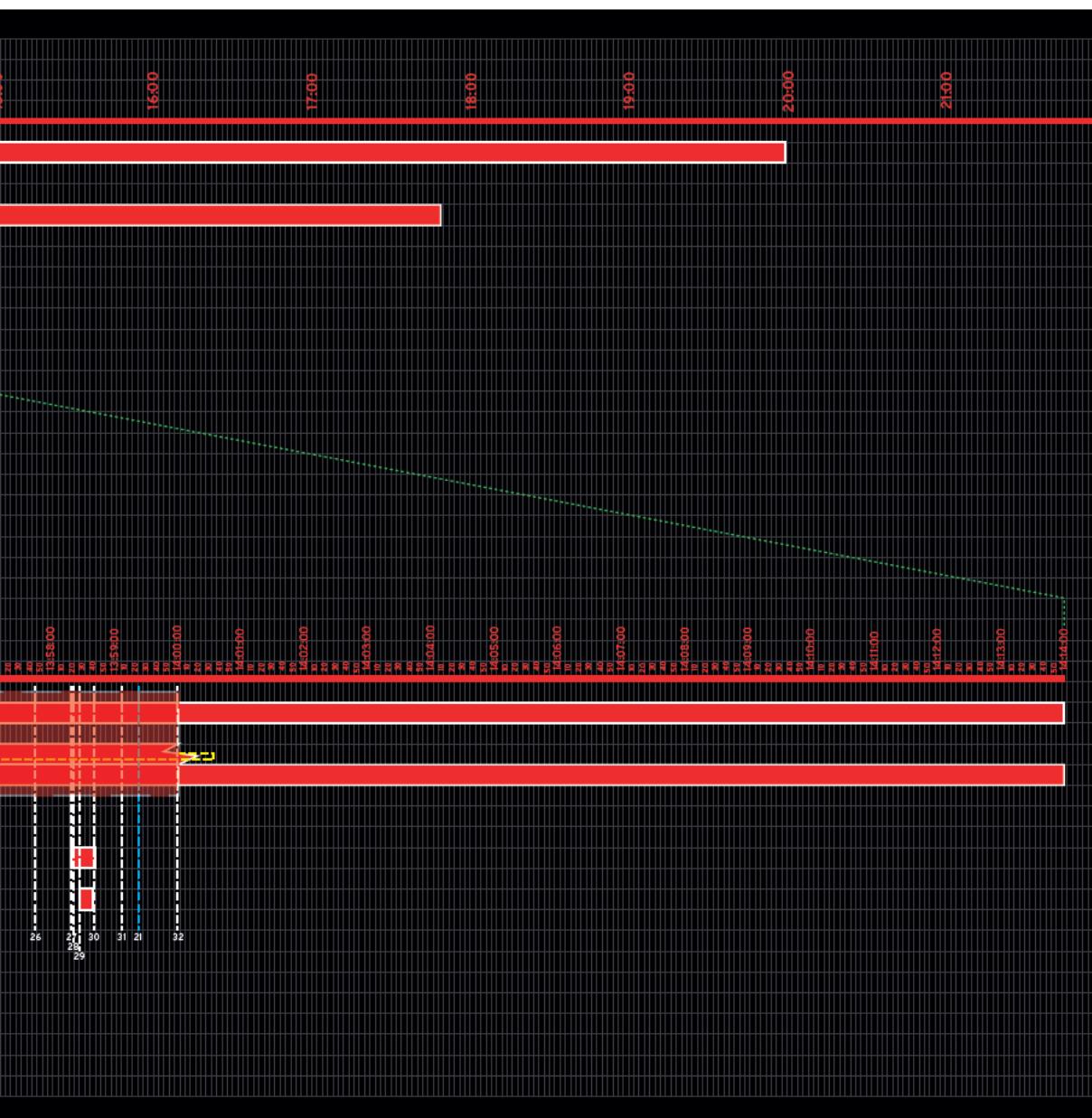
Bottom: 32. Boulevard Voltaire blocked by Police at Intersection with Rue Oberkampf

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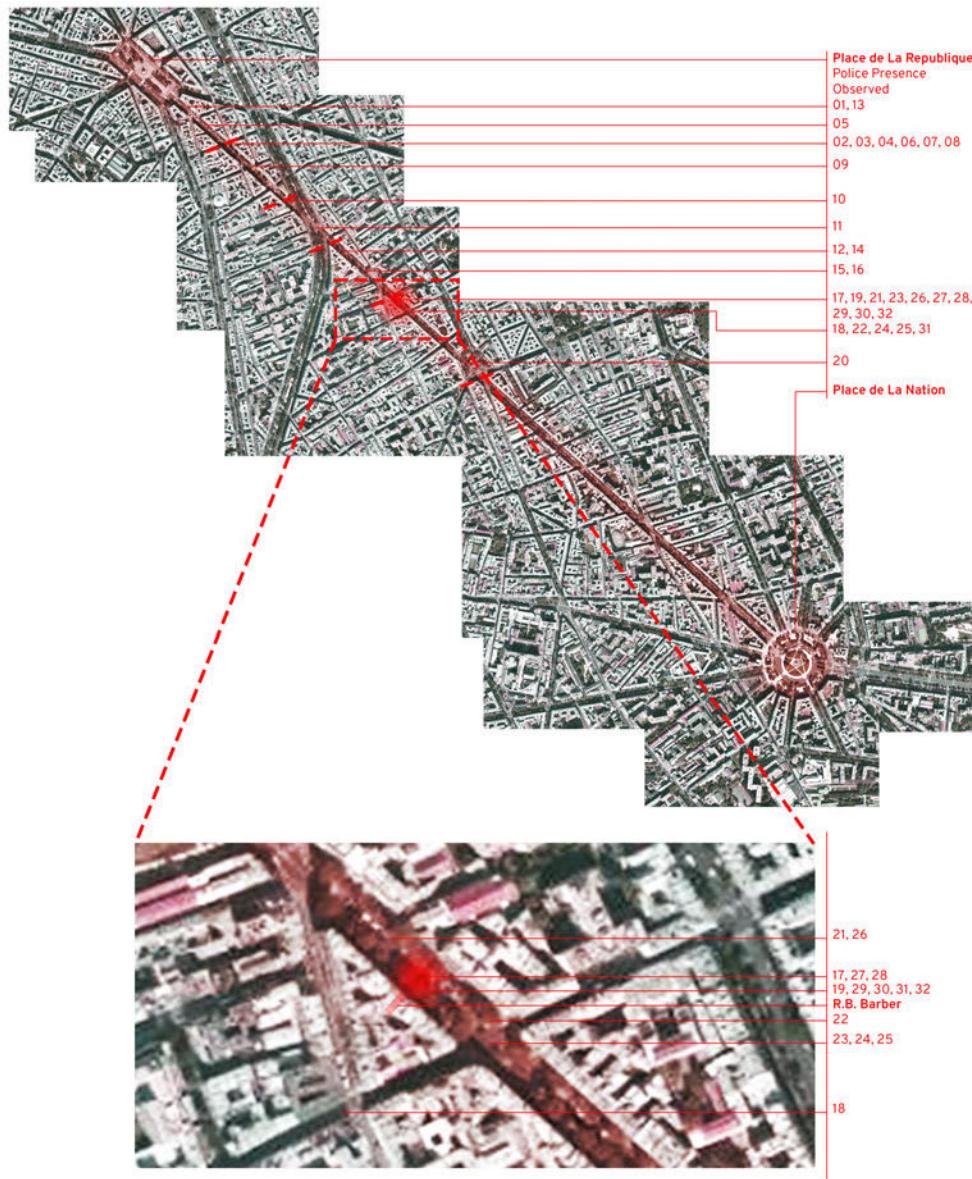


33. Exhibit I, Timeline of Events on Labour Day

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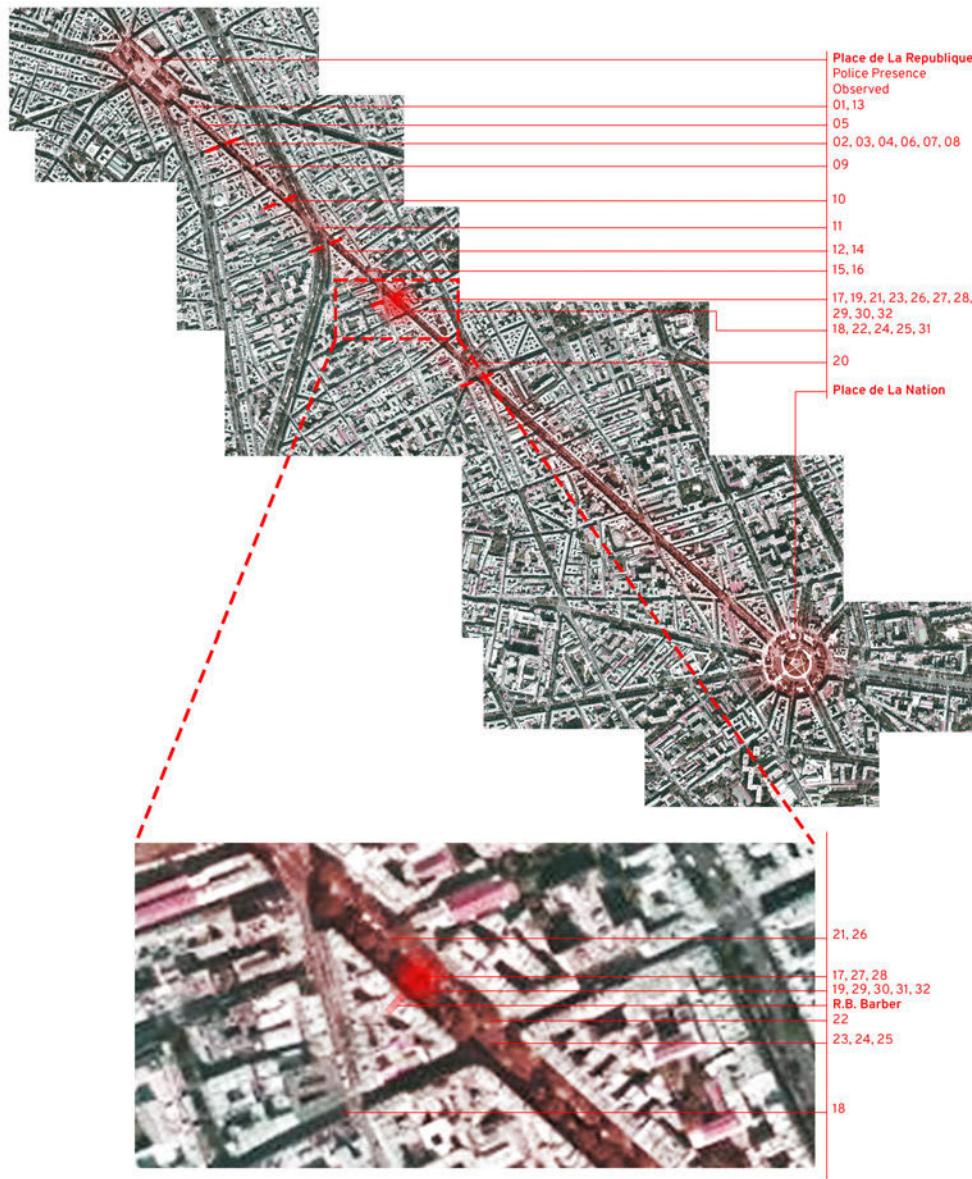


34. Exhibit J, Map of Boulevard Voltaire, with incident markers

Incident Log Table

Ref.	Timestamp	Exhibit	Description	Evidence Analysis
01	11:41:42	D	Mass crowd movement begins down Boulevard Voltaire, Protestors are peaceful.	
02	11:45:17	D	Mass Police Presence on junction of Societe Generale.	
03	11:47:35	D	Nationale Police and Gendarmerie observed forming the first of several barricades. Segmenting and managing the crowd.	
04	11:53:03	D	Gendarmerie Vehicles are observed moving from side streets onto Boulevard Voltaire, facing Place de La Republique. Riot gear is also being prepared as the crowd increases in size behind the police line.	

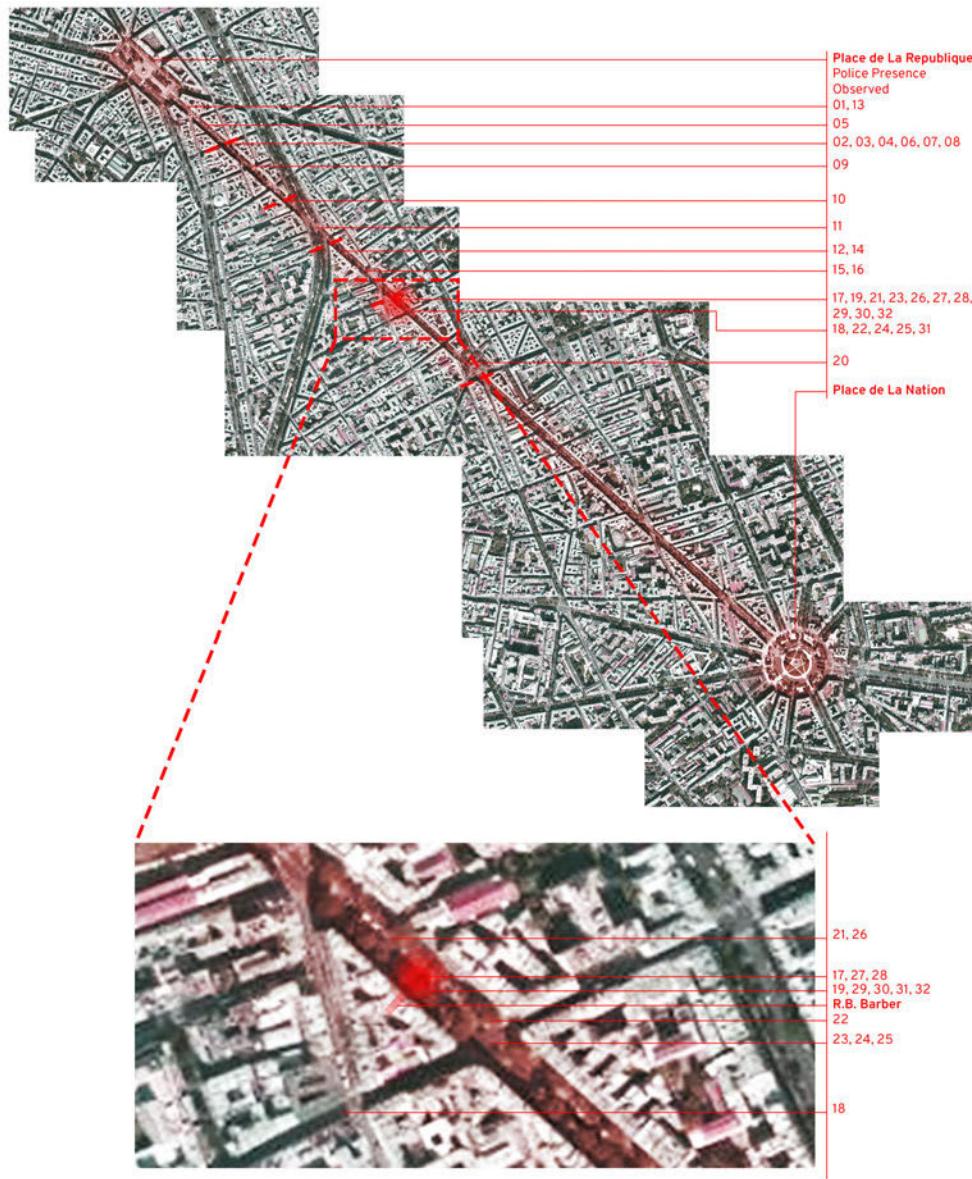
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34. Exhibit J, Map of Boulevard Voltaire, with incident markers

Ref.	Timestamp	Exhibit	Description	Evidence Analysis
05	12:06:00	C	Exhibit C begins streaming within the crowd at the entrance of Boulevard Voltaire.	
06	12:34:02	D	Light Explosives can be heard detonating behind the police line. Protestors have been stalled at this junction, by police for 47 minutes.	
07	12:50:53	D	Exhibit D zooms to the entry point of Boulevard Voltaire, by Place de La Republique, a high concentration of people can be observed trying to enter Boulevard Voltaire, as the street backlogs.	
08	13:14:54	D	Protestors and Journalists can now be observed spilling around the police barricade. Officers are now facing both directions down Boulevard Voltaire as they become surrounded. At this time, it begins raining, increasing tensions.	

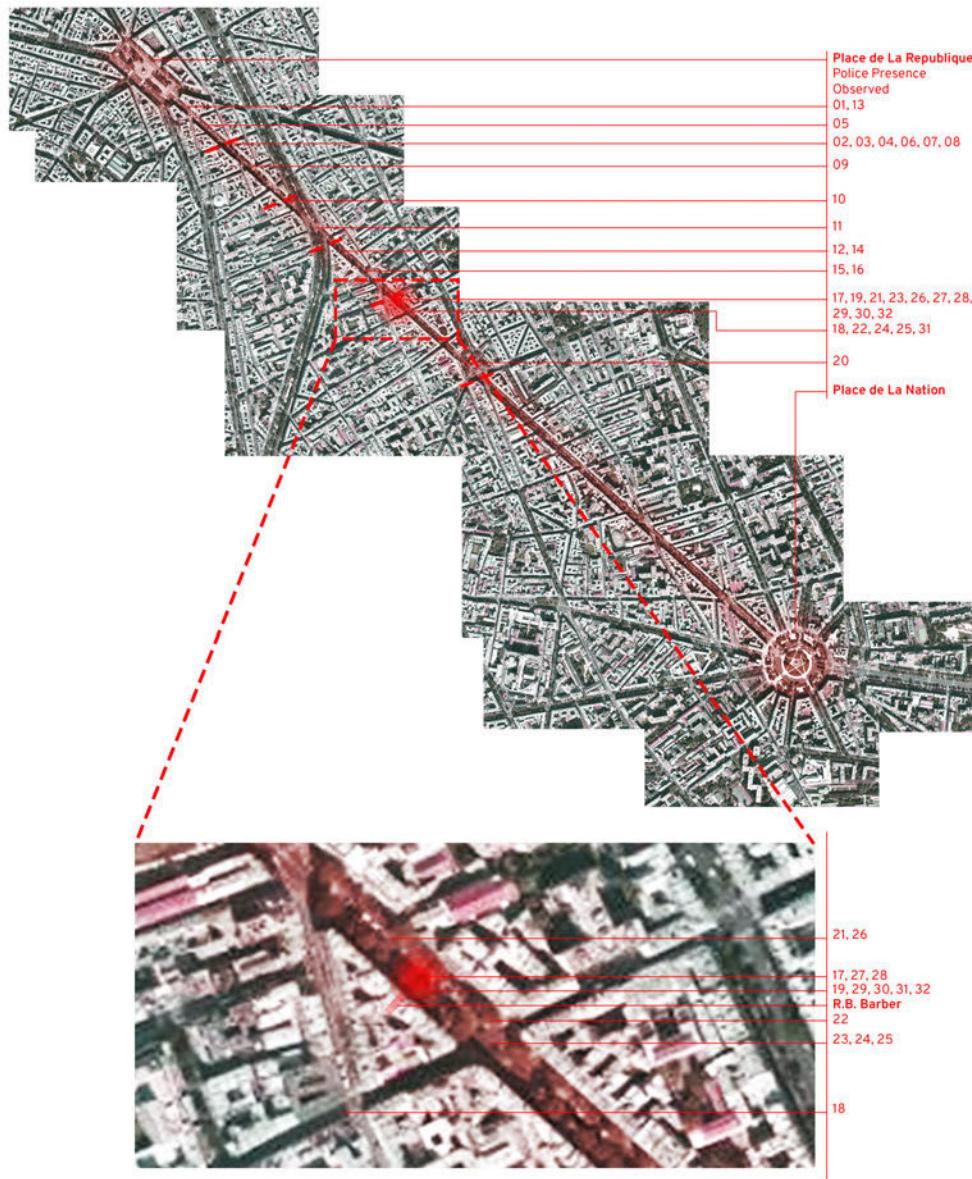
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34. Exhibit J, Map of Boulevard Voltaire, with incident markers

Ref.	Timestamp	Exhibit	Description	Evidence Analysis
09	13:16:09	D	Police begin moving in formation, walking the protest down Boulevard Voltaire. Fireworks can be distinctly heard detonating as the crowd moves roughly at half a metre per second.	
10	13:18:59	D	The Police Barricade stops again and now stands outside Basilic&Co. The crowd is now just 30 minutes and 500 metres away from the R.B. Barber shop front.	
11	13:25:00	D	After standing for 6 minutes, the crowd resumes along the street. Significantly louder explosives can be heard and smoke can be observed rising from the crowds.	

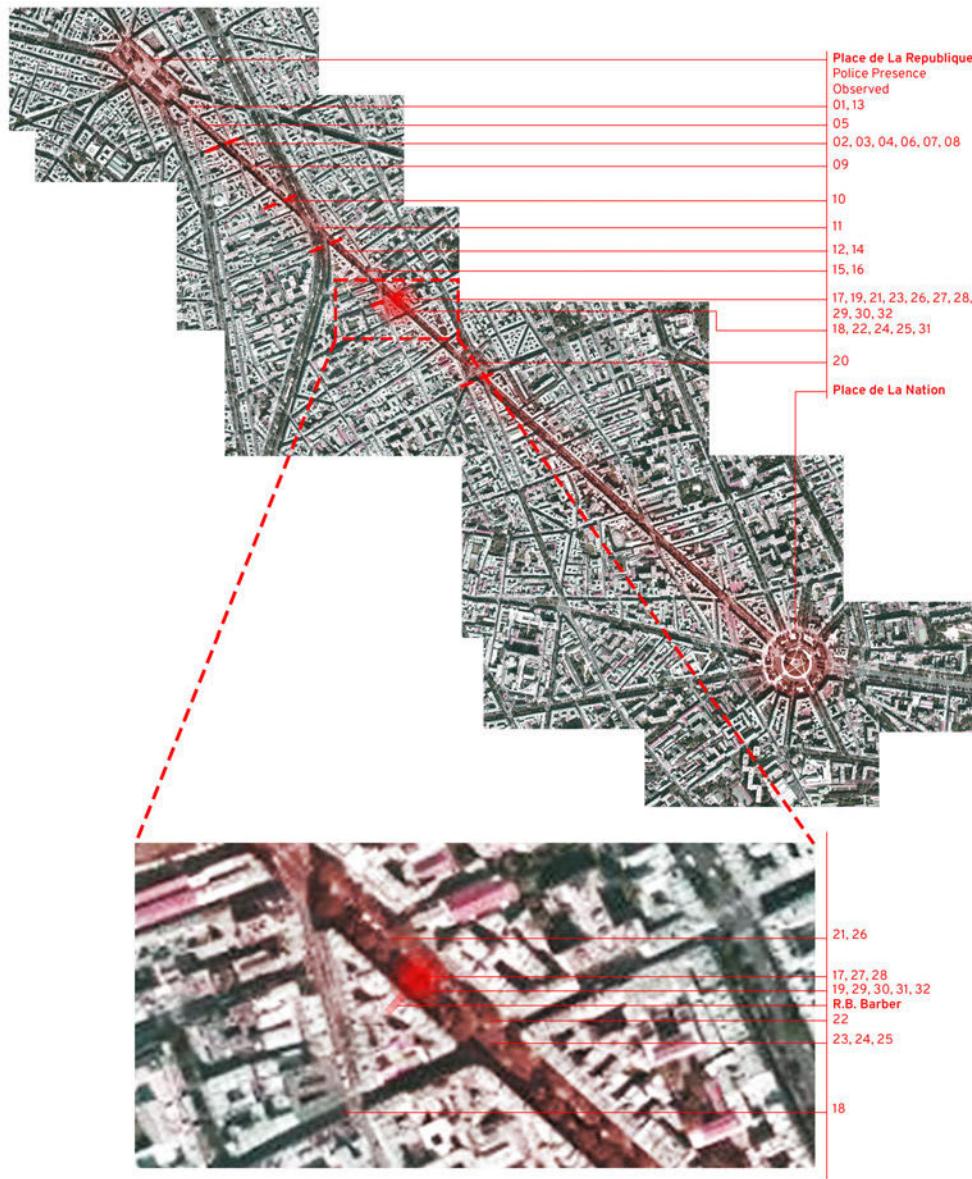
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34. Exhibit J, Map of Boulevard Voltaire, with incident markers

Ref.	Timestamp	Exhibit	Description	Evidence Analysis
12	13:26:20	C	Exhibit C shows broken footage of a violent outburst. Although blurry, this is captured outside Repair and Run, approximately 250 metres from the incendiary explosion, and the camera of Exhibit D. A second police barrier can be observed at this point, proving the crowd is being segmented.	
13	13:27:53	C	A bottleneck is observed at the entry to Boulevard Voltaire from Place de La Republique as protestors attempt to enter the street and are blocked by further police barriers.	
14	13:27:54	D	Outside Attitude Cafe, Police begin throwing tear gas canisters at protestors, these are thrown back.	

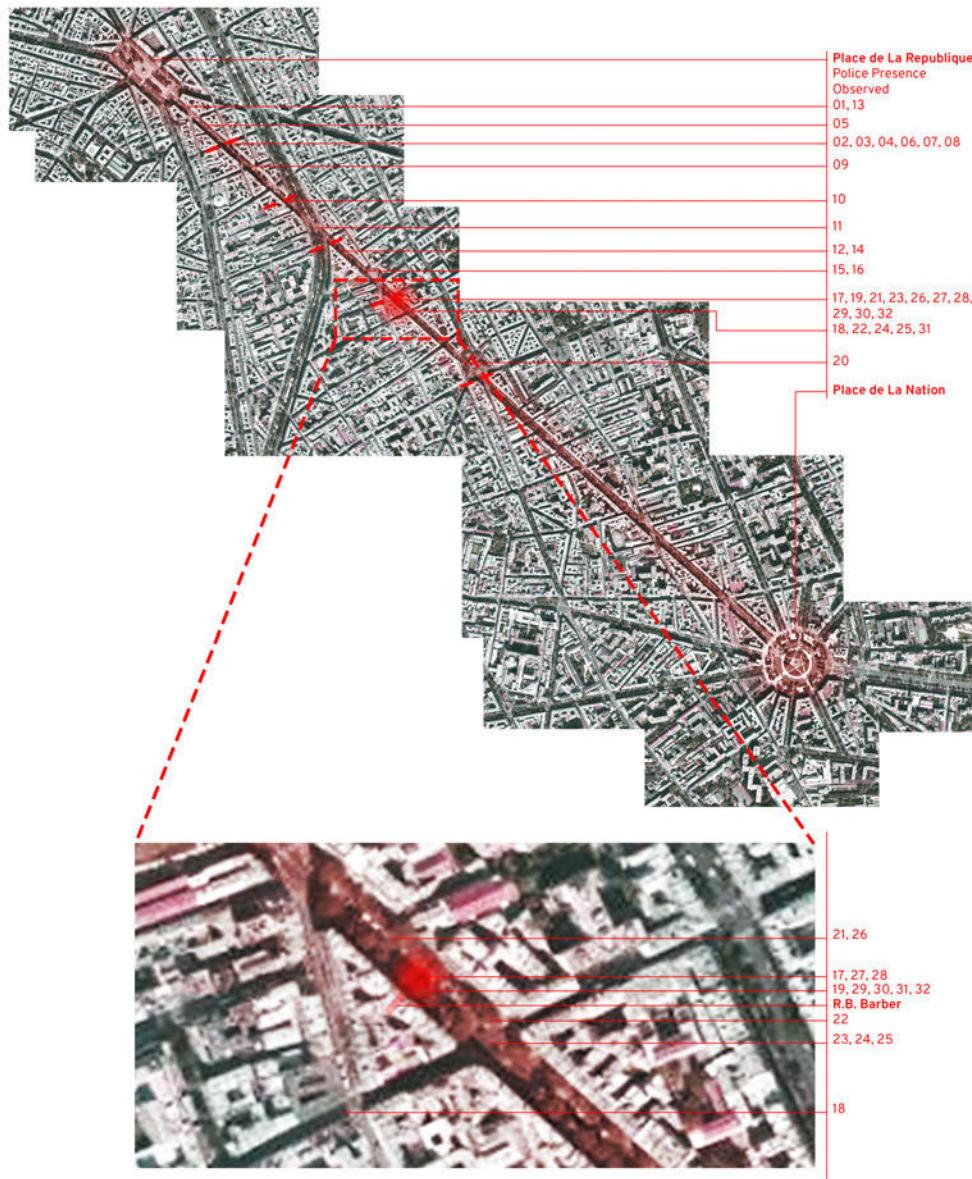
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34. Exhibit J, Map of Boulevard Voltaire, with incident markers

Ref.	Timestamp	Exhibit	Description	Evidence Analysis
15	13:30:20	D	Security Forces can be seen retreating away from the crowds, outside Premibel Parquet. They are adorning riot shields, and appear to have lost control of protestors.	
16	13:31:05	D	An officer can be observed receiving medical attention on their ankle, outside Les Cent Kilos De Paris.	
17	13:35:21	D	Exhibit D reaches the R.B. Barber shopfront as the crowd continues to move, the police line is still being maintained, however, the number of officers has reduced, suggesting officers are now stuck behind the police line, amongst the crowds.	
18	13:36:04	D	Exhibit D witnesses a significant number of officers collecting in a side street, past the R.B. Barber Building.	

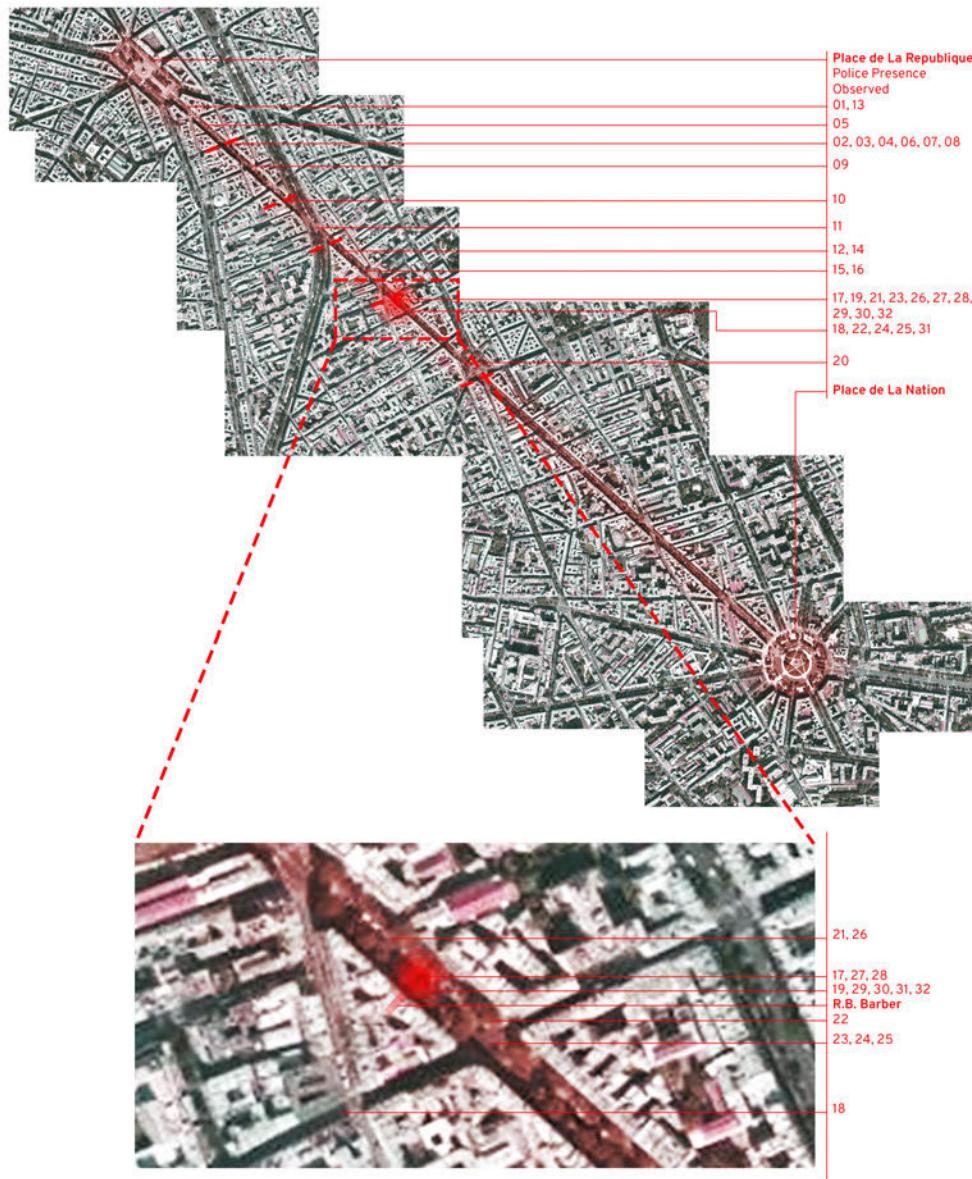
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34. Exhibit J, Map of Boulevard Voltaire, with incident markers

Ref.	Timestamp	Exhibit	Description	Evidence Analysis
19	13:38:15	D	A police barrier is established directly outside the R.B Barber shopfront.	
20	13:50:00	D	Exhibit D observes a secondary police line, ahead of the camera, segmenting the crowd further. Black Bloc protestors can be seen in this footage, as glass is thrown at police officers adorning riot shields.	
21	13:59:24	C	Exhibit C enters within 50 metres of the R.B.Barber shopfront.	
<i>Time-Gap Buffer of ~8 Minutes, confirmed time is ~13:53</i>				
22	13:53:54	C	A clear shadow is projected in Exhibit C, from a tree directly in front of the camera, outside the Copy-Top building. This gives point of reference to determine a precise point in time.	

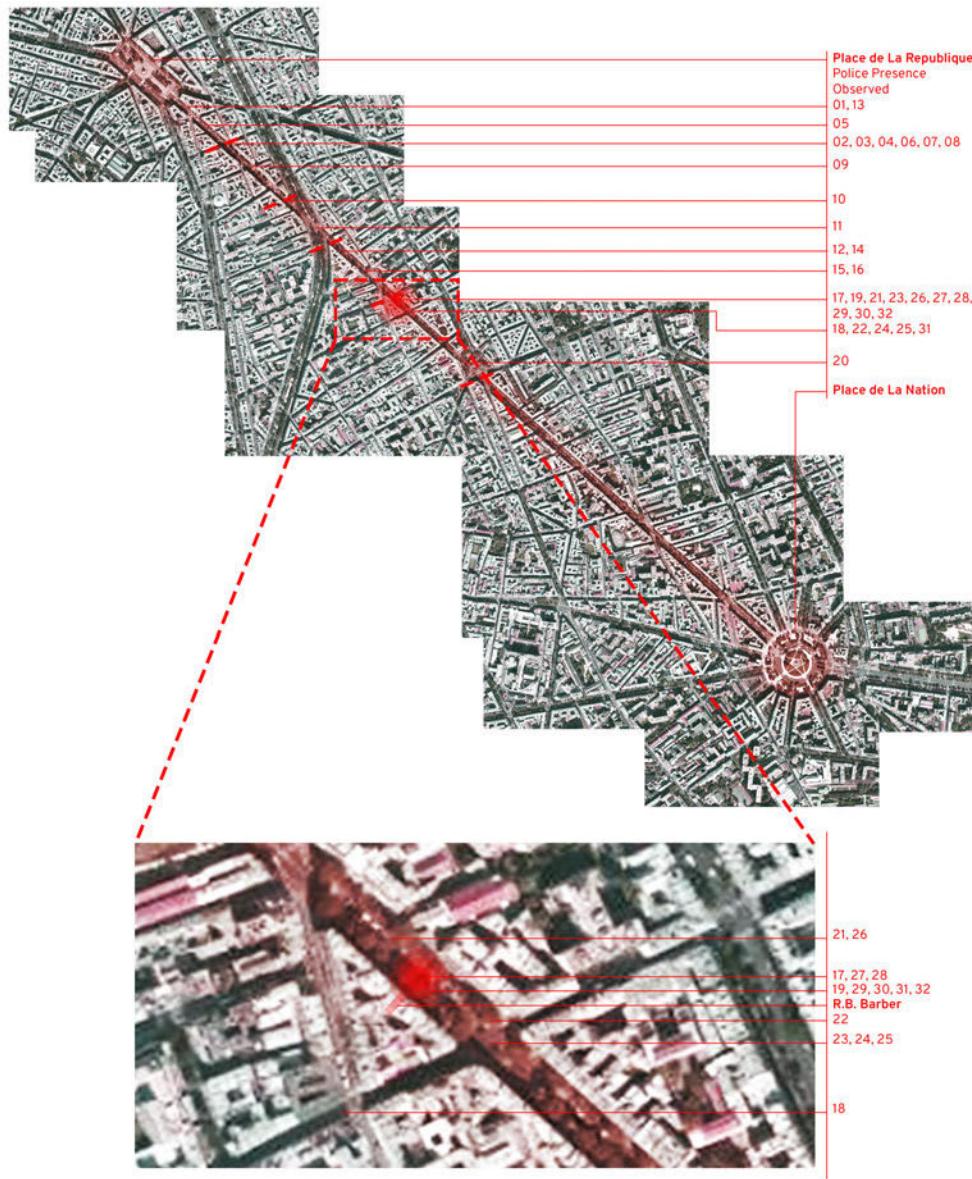
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34. Exhibit J, Map of Boulevard Voltaire, with incident markers

Ref.	Timestamp	Exhibit	Description	Evidence Analysis
23	13:54:36	C, E	Exhibit E aligns with Exhibit C.	
24	13:54:44	C, E	Police emerge from the side street they were observed in by Exhibit D. They are witnessed rushing into the crowd outside the R.B. Barber Building, back up Boulevard Voltaire, toward Place de La Republique. Protestors are pushed back with heavy force, by the police. People are penned onto the footpaths, and others are forcefully removed from the crowd.	 
25	13:55:44	C, E	Police begin retreating and come under heavy assault by protestors as they pass the Copy-Top Building again.	

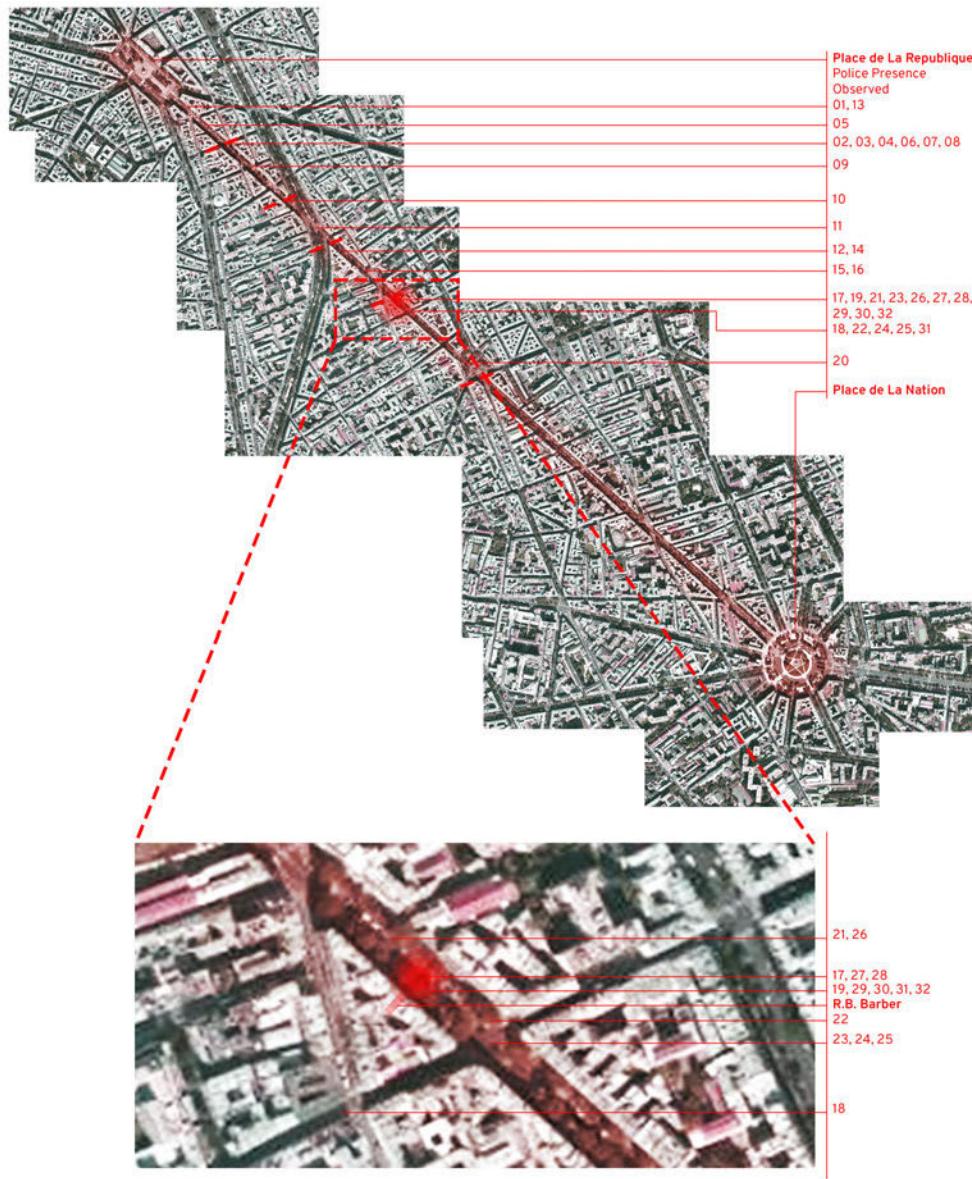
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34. Exhibit J, Map of Boulevard Voltaire, with incident markers

Ref.	Timestamp	Exhibit	Description	Evidence Analysis
26	13:57:48	C	The camera switches to the rear of the crowd, and police can be observed entering the right side of the frame, from the direction of Place de La Republique. Seconds prior, they could be observed as a remaining group of officers from the previous run on the crowd.	
27	13:58:20	A, C	The footage from exhibit A begins.	

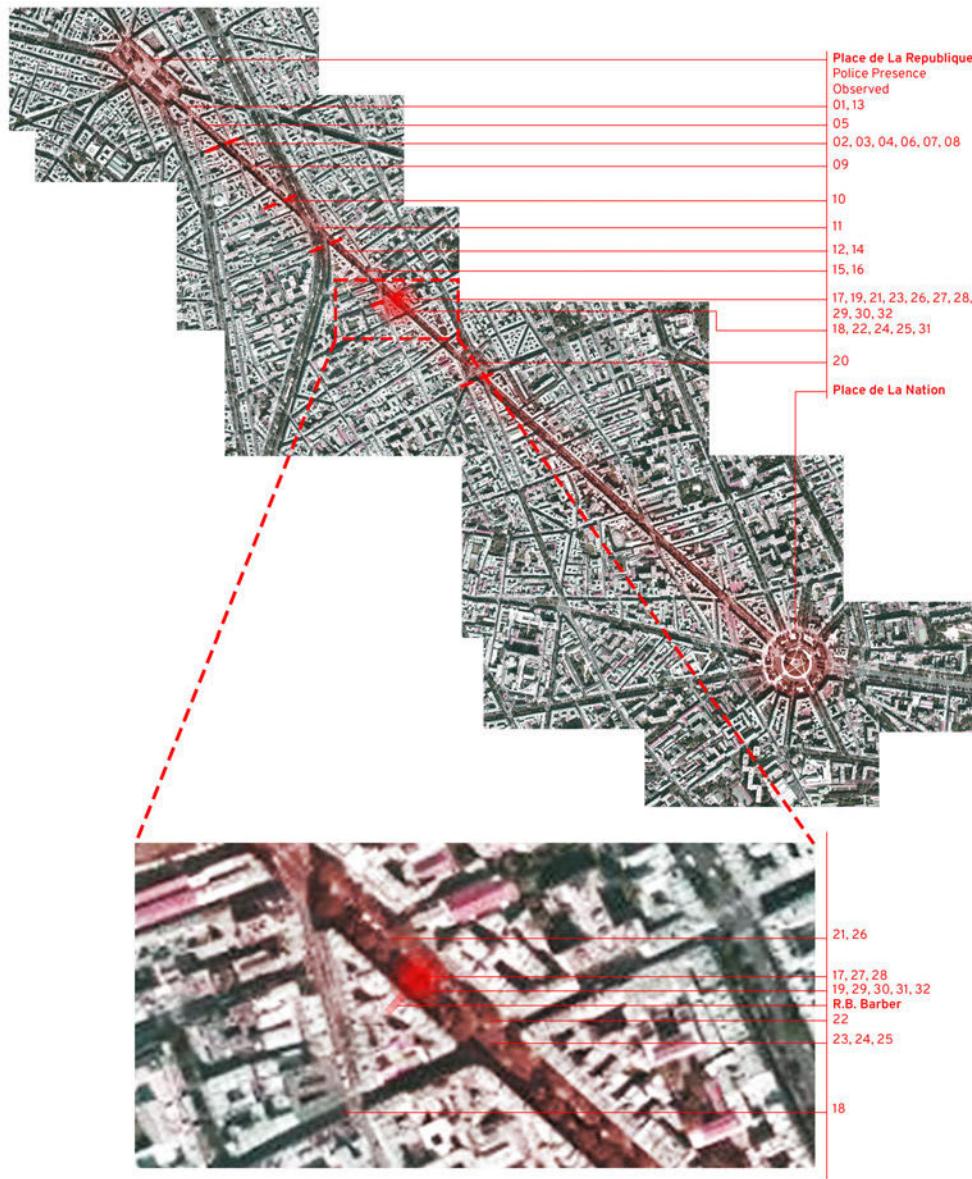
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34. Exhibit J, Map of Boulevard Voltaire, with incident markers

Ref.	Timestamp	Exhibit	Description	Evidence Analysis
28	13:58:21	A, C	<p>The petrol bomb is thrown from the crowd, on the same side of the road as the R.B. Barber building, at police officers. It detonates, with at least 7 officers becoming inflamed, two officers remain ignited. Officer A runs approximately 10 metres toward the R.B. Barber Building and collapses on the pavement, trying frantically to extinguish the flames. Officer B is pulled in the same direction, approximately 8 metres, before also collapsing on the road.</p>	  

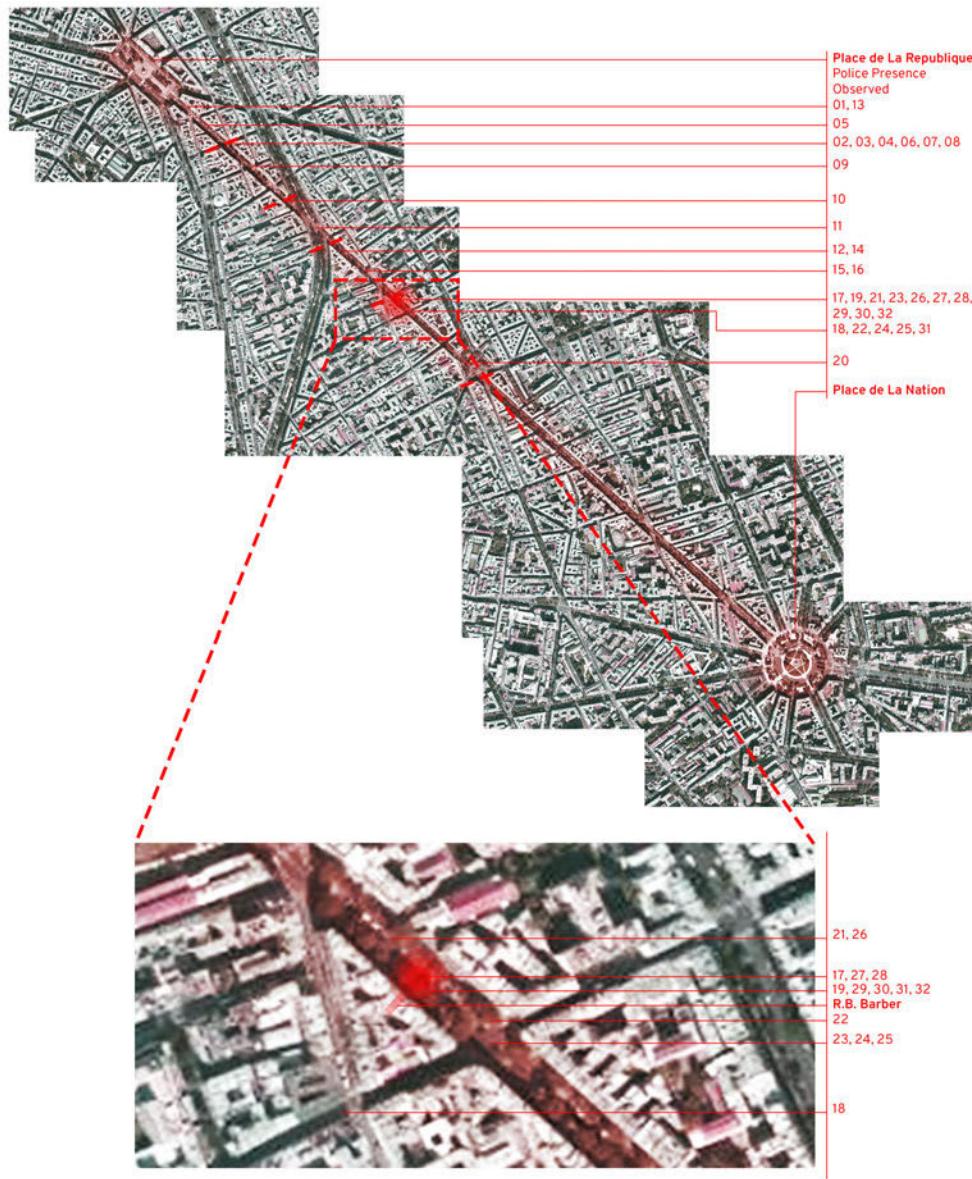
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34. Exhibit J, Map of Boulevard Voltaire, with incident markers

Ref.	Timestamp	Exhibit	Description	Evidence Analysis
29	13:58:27	A, B, C	Footage from Exhibit B starts. Officer A is observed with flames engulfing their central torso/ abdominal region, alongside briefly igniting their back. The flames burn for a total of 11 seconds, from the point of detonation, before another officer extinguishes them. Officer B can be observed in the background receiving medical attention, the flames on their body affected the back and lower leg.	 
30	13:58:41	B, C	As police surround the two injured officers, they come under heavy fire from protestors.	
31	13:59:07	C	Violence has completely erupted along the R.B. Barber stretch of Boulevard Voltaire. Police use tear gas to subdue protestors, obscuring the camera in Exhibit C.	

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34. Exhibit J, Map of Boulevard Voltaire, with incident markers

Ref.	Timestamp	Exhibit	Description	Evidence Analysis
32	14:00:01	C	Officer B can be observed receiving medical attention from medical staff, they are still lying on the road. The camera cuts to another scene shortly following this. Neither Officer A or B is observed again.	

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Conclusions: Democracy or Regime?

Through this preliminary study, I have reconstructed the 3-Dimensional space to determine a cohesive narrative, revealing the events which led up to an attack on two police officers. This study establishes the necessary conditions for subsequent interrogation of the evidence I have collated, to determine an answer to a significant intelligence question. When I set out to inquire around this incident, the overarching question stood as: '*Did police actions during the Labour Day protests escalate tensions, leading to the incendiary incident outside the R.B. Barber Building?*' This being a preliminary study, cannot be determinative in that case, as although I have strived to collate a significant amount of intelligence, there is a large part of the picture missing. Despite this, a convincing case from this research could suggest that the police management of such a large crowd, through segmentation and poor pacing, alongside poor placement of officers, and the use of tear gas and riot gear so early in the protests, could have easily contributed to the violence presented by Protestors. This in no way excuses the protestors, however, with a considerable number of Black Bloc protestors visible throughout the march, many individuals set out with the intent of violence. The question to answer is, *was that violence escalated more than it should have been?*

Another significant question that this research may be prime placed to answer is that on the use of Tear Gas against civilians. Banned by the Geneva Convention for use in warfare, countries are exempt on the use of Tear Gas against their own citizens for the use of the likes of riot control.⁵⁰ Throughout the footage I gather, significant amounts of this gas is propelled at individuals from hand-held launchers, posing a question as to the *dangers that citizens were placed in, and whether these violated their human rights?*

In this instance, it is clear to determine that the Labour Day protests descended into a state of chaos. They posed a serious risk to life on both sides of the protest, and the violence exhibited by individuals resembled Anarchy – beyond the boundaries of authority – a revolution against a regime imposing laws protested by the state's majority population. Whether this is a regime reaching the standards of a dictator, or merely a government flexing their power, isn't answerable in a preliminary study, but it is left to the imagination.

50. 'International Humanitarian Law Databases - Practice' <<https://ihl-databases.icrc.org/en/customary-ihl/v2>> [accessed 12 January 2024]



Conclusion: A Forensic Architecture in the Matrix of Architectural Investigation

Although in its infancy, Forensic Architecture as a practise and a practice, is actively changing the interaction between evidence, time, space, and jury. A politically and legally driven effort to affect change in the modern world, Architecture as Evidence gives a voice to the urban realm – the very environment we as a species inhabit daily. It exposes criminal activity by actors which hold themselves at the pinnacle of the law.

I opened, exploring Architecture as Evidence, relating the idea that the interconnectedness of the modern world, leaves a trace, physically, on the urban environment, which is subsequently recorded by those who inhabit it. I determined how the core manifestation of Architecture as, defined by Giancarlo de Carlo, prompts the idea of a 'more', the beyond of architecture, the understanding that the built environment contains tangible and interpretive information. Drawing on the works of Terry Farrell and Gordon Cullen, I prompted the idea that information in the Urban Realm could be interpreted in a specific, regimented manner, and through an interdisciplinary lens.

I set out to certify Forensic Architecture's definition as a field of Architectural study. Through its existing framework, FA is loosely defined in its relationship to Building and Conflict Surveyors, with the core roots of its investigative practise existing in 'Forensis', and the forum, but rarely directly in Architectural Theory. Establishing the Architectural Investigation Matrix, through Farrell's interdisciplinary lens, and Cullen's Serial Vision, gives credibility to Forensic Architecture as a practise of Architecture. FA's approach to investigation, examining each phase of a crime one frame at a time, mimics Cullen's walk through an urban space, and the graphical presentation of this, in-turn, relating back to architecture. Farrell's proclamation that Architecture is an amalgamation of parts, rather than a singular line of inquiry, also gives credit to the effort of Forensic Architecture in the understanding of a wide variety of specialist fields, in order to conduct an expansive inquiry. A previously undefined area, the Architectural Investigation Matrix forms the umbrella address for the combination of Architectural Theory, Architectural Evidence, and Architectural Analysis.

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Stretching beyond these boundaries, I then explored the known and established fields of the Architectural Investigation Matrix, defining Open-source intelligence as specific evidence, using the framework of the UK Justice System, giving it palpability as evidence which could not only be interpreted at face value, but spatially through Uffe Kock Will's analysis of co-offenders. Beyond this, I considered how Open-Source intelligence intersects with Architectural Evidence, in the realm of Forensic Architecture. I defined how Forensic Architecture envisages itself through its manifesto – rooted in Forensis – before then considering how it approaches an investigation, examining the case of Mark Duggan. I extracted principles and practises that FA employs in its examination of Open-Source Intelligence and how they conduct an analysis which draws on the expertise of an architect.

Before moving further, I also considered the ethical framework which exists around this practice. Defining the Terror Space, I laid the framework with which a Forensic Architect can work within, upholding their best effort to not allow such a space to form within their investigations and to ensure that those who become involuntarily involved in a case are protected. Subsequently I also defined the risks and dangers of people becoming too comfortable in the virtual, public world, and how others, the state, institutions, and the stalker can manipulate Forensic Architecture for nefarious means.

Applying all of this research through Creative Practise, I then employed these learned techniques in an analysis of the French Pension Reform protests. This forms a preliminary study, of which can be drawn upon to conclude whether French State Security forces acted in an appropriate manner in the execution of their duties. Through this application, I presented an understanding of the depth to which Architecture intersects with criminal investigation as I employed the use of 3-Dimensional Softwares and analysis of visual media, however, beyond this, I also demonstrated how Architecture informs the process through which I chose to present this research, through a combination of visual recording techniques.

The Architectural Investigation Matrix is the umbrella term encompassing Forensic Architecture, or more specifically, the set of conditions within a criminal case, which allows Forensic Architecture to exist. AIM is the understanding of spatiality in evidence, the interpretation of data from the urban realm, and the recreation of spaces of crime for narration and further inquiry. AIM also recognises the dangers of Forensic Architecture, the Terror Space, which it creates as people become ever more exposed to their own inhibition to publish themselves online. Unlike Forensic Architecture in its current form, which only intersects with architecture through its analysis and narration of evidential facts, AIM provides a tangible, theoretical link to Architecture: interdisciplinary thinking, the framing of evidence, and the spatial relationship evidence has with the urban environment.

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Terminologies

Adobe

A branded package of proprietary software for visual editing, i.e. Adobe Photoshop is primarily used for the manipulation of imagery.

Architectural Evidence

Evidence contained within the fabric of a building from its use. This evidence can be from human inhabitation, a buildings' environment, or non-human species.

Architectural Investigation Matrix (AIM)

A coined term summarising the set of conditions within a criminal case, which allows Forensic Architecture to exist, including Architectural Theory, overarching social conditions, Open-Source platforms, historical contexts, and Architectural Methodologies.

Blender

An Open-Source 3-Dimensional modelling engine, primarily used by the organisation, Forensic Architecture.

Cloud Study Analysis

The technique of interrogating footage of a fluid-like-body, to determine an unknown fact. Primarily modelled in 3-Dimensions, and then projected back into 2-Dimensions.

Comfort Space

A space which individuals think they enter when they interact with Open-Source networks, as they are unaware of the danger of non-privacy.

Conflict Surveyors

Those who challenge the ethos and argue that Forensic Architects 'can exit the specialised framework of insurance disputes', into urgent contexts like Armed Conflict.

Counterforensics

The practise of turning the states own resources against itself, in order to hold the state accountable.

Crime Pattern Theory

A method of explaining which people commit crimes in a specific space and time. Further, the analysis of these criminal events in space and time to prove or disprove a theory exists.

Evidence

A data point collected in the interest of examining a crime. This could be a physical data point or a digital one. Evidence can also come in the form of testimony.

Evidence Assemblage

The network of evidence which tends to prove or disprove whether a crime has been committed. An evidence assemblage generally forms the basis for a criminal case.

Exhibit

An exhibit is 'information given to the court and the jury to help them decide if a crime has been committed', which aims to prove the truth. Exhibits are primarily formed from evidence, and only become exhibits when presented to the court.

Forensic Architects

An individual who practises Forensic Architecture. Forensic Architects may work for or with the organisation Forensic Architecture, others may not. Some Building Surveyors, involved in insurance litigation, identify as Forensic Architects.

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Forensic Architecture	A practise and discipline of Architecture, but also, an organisation of the same name, founded by Eyal Weizman, and based at Goldsmiths University, University of London.
Forensis	A Latin word meaning, ‘pertaining to the forum’, the mandate of the organisation Forensic Architecture, as they introduce the studio as a space of evidential discussion.
Jury	A group of members of the public who listen to the facts of a case in a court and decide whether or not somebody is guilty of a crime, or whether a claim has been proved.
MakeHuman	An Open-Source Software, in the process of acquirement by Unreal Engine. This software allows the generation of anatomically accurate 3-Dimension models of people.
Open-Source	Something which allows complete open-access. This could be a software which is created by the people who use it or information which is freely available without licensing.
Open-Source Intelligence (OSINT)	Information acquired without licensing and through legal means. Open-Source Intelligence is primarily used in the investigation of a significant intelligence question.
PLACE	Terry Farrell’s proposed acronym which highlights Architecture’s need for interdisciplinary action. Planning, Landscape, Architecture, Conservation and Engineering.

Shadow Analysis

A modified Architectural Technique, previously used to determine shade cast on a structure, in Forensic Architecture, it can be used as an accurate method of acquiring a time-frame of an event, similar to how a sundial works.

Sketchup

A proprietary modelling software primarily used by Architects. Licensed by Trimble, it also contains tools which allow forensic analysis of 2-Dimensional Imagery in 3-Dimensional Space.

Terror Space

A space in which unknowing individuals enter as they interact with urban spaces. Within a terror space no individuals privacy is truly respected and any individual is traceable in some form.

Urban

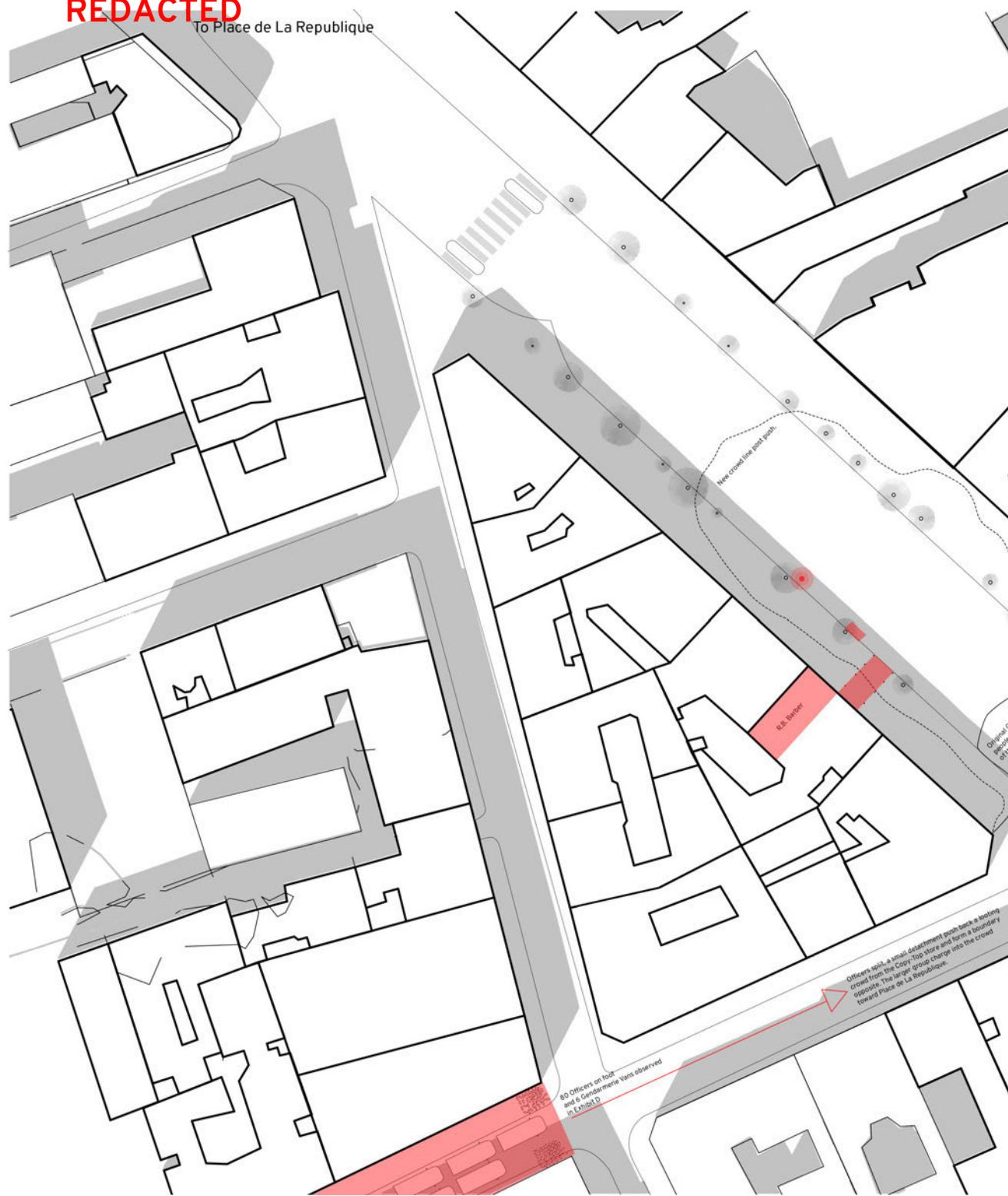
For the purpose of this dissertation, any space which has been affected by Architecture, or the human condition.

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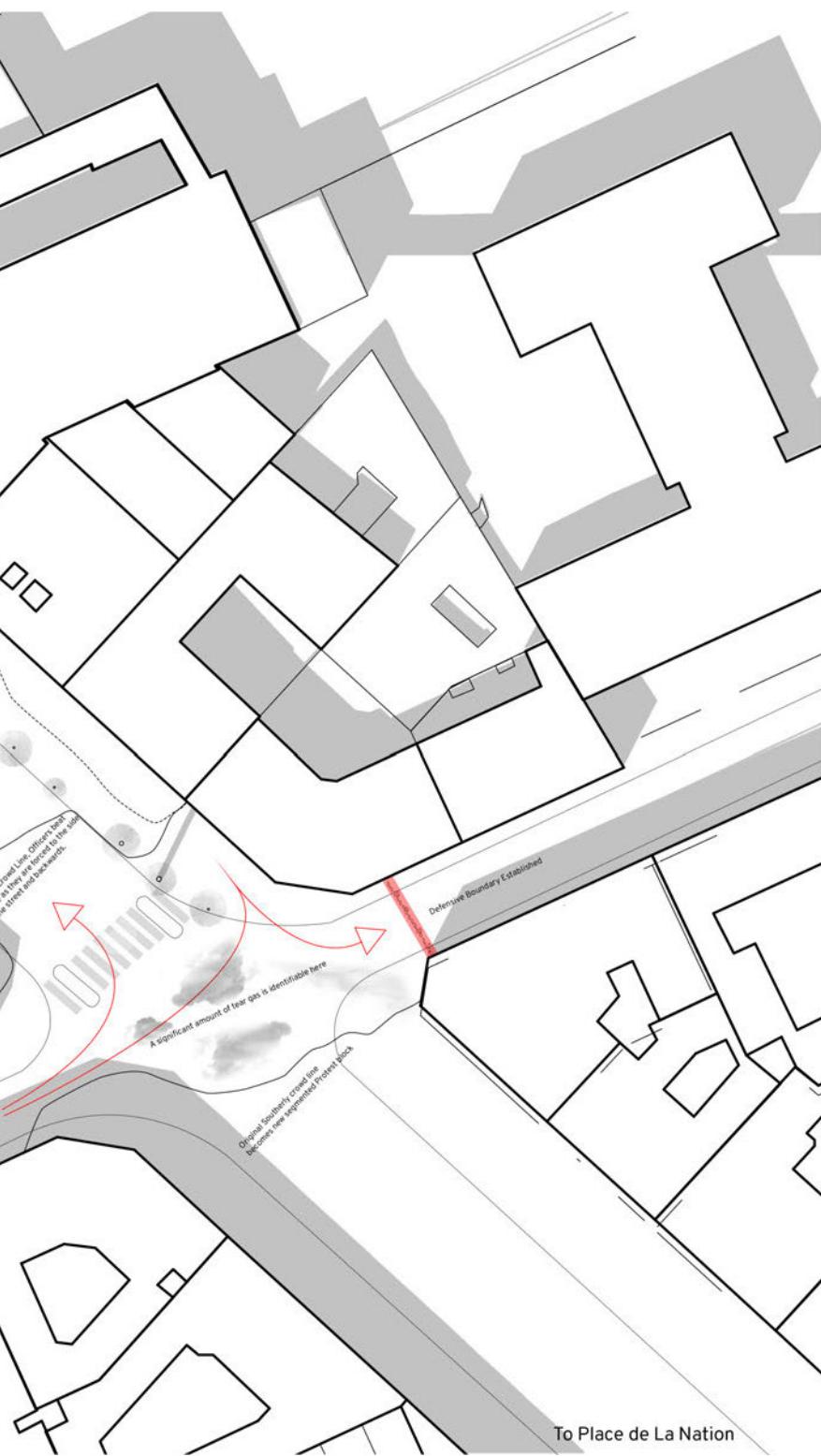
REDACTED

To Place de La Republique



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Large Format - Exhibit C Crowd Analysis



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To Place de La Republique



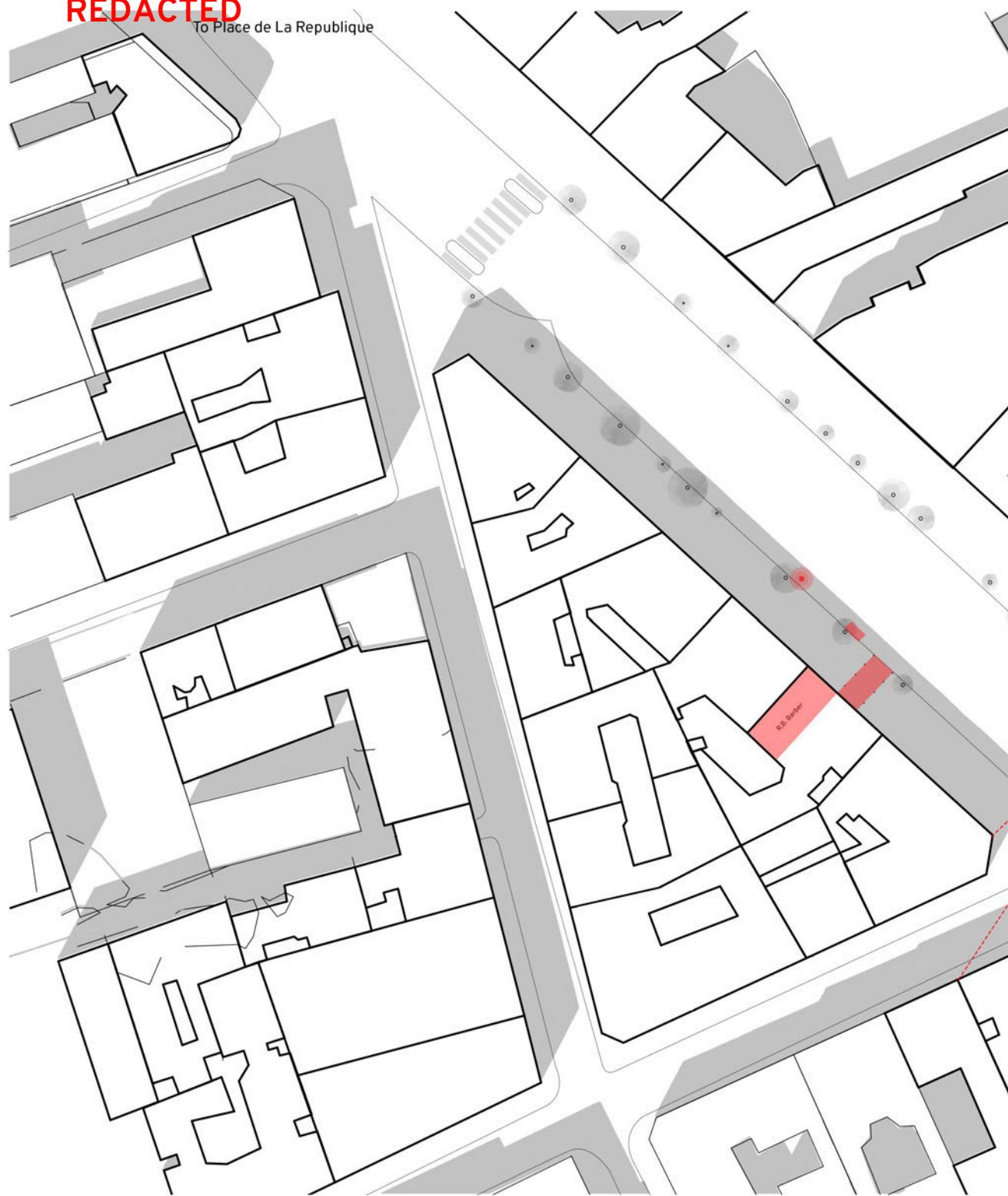
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Large Format - Exhibit A, B, C Movement Analysis



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To Place de La Republique



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*Large Format - Exhibit C Shadow Analysis
Projection*



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List of Figures

Cover:
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Figure 1:
Cullen, Gordon, *The Concise Townscape* (Oxford; Boston: Butterworth-Heinemann, 1995) www.architecturalpress.com

Figures 2-3:
Wiil, Uffe Kock, ed., *Counterterrorism and Open Source Intelligence, Lecture Notes in Social Networks* (Vienna: Springer, 2011) <https://doi.org/10.1007/978-3-7091-0388-3>

Figures 4-5:
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Figures 6-13:
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Incident Log Table:
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Farrell, Terry, Bristol Figure Ground Image - Landscape Sketches File, 2001, Drawing, A4, The Farrell Archive, Landscape Sketches File, Box ID:0002, Item ID:7013

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