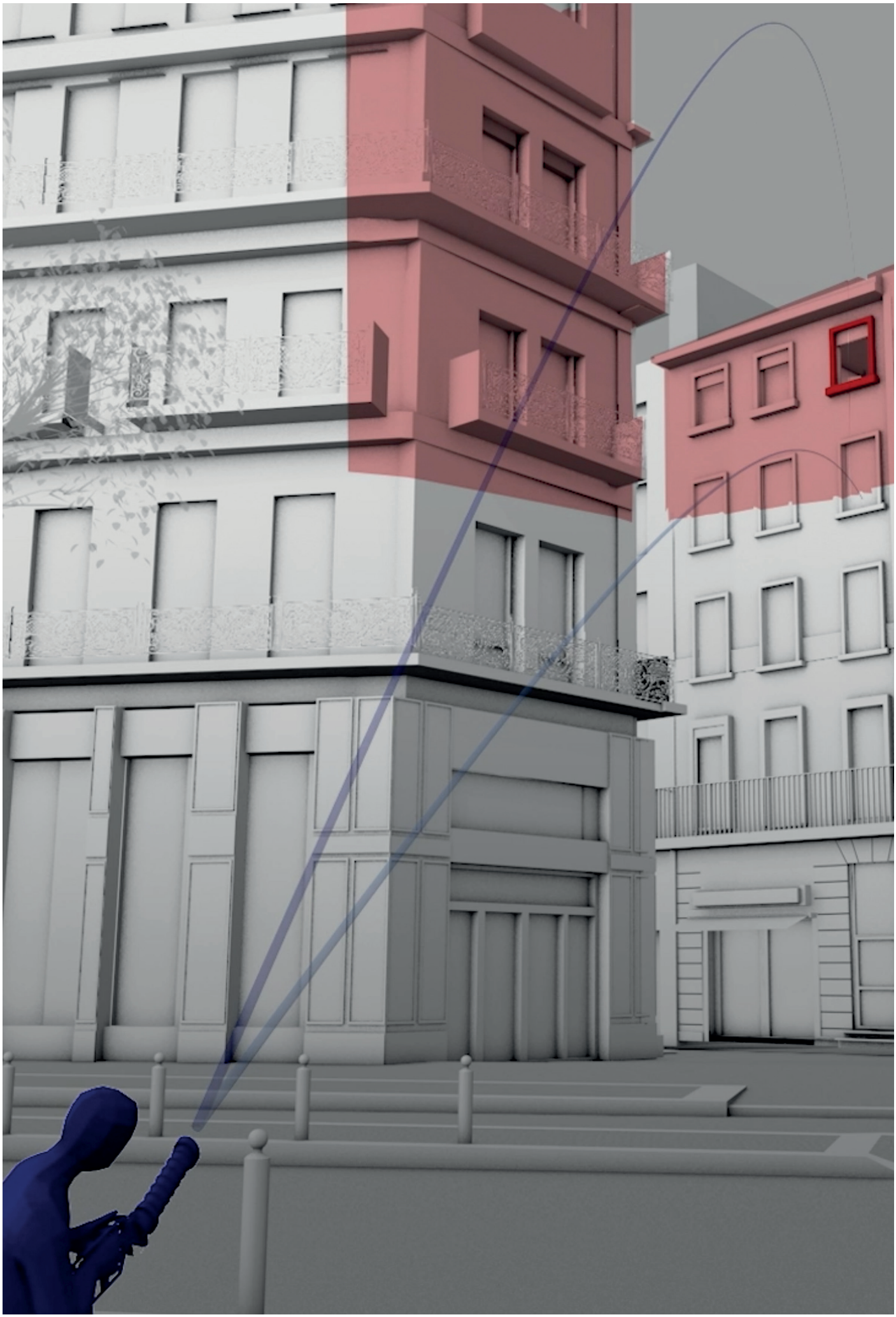


seeing beyond the frame(s)

a case study of image-to-space analysis for citizen investigation

Francesco Sebregondi & Emile Costard - March 23, 2023

• *counter-investigation* • *visual evidence* • *spatial analysis* • *state violence* • *architecture* • *expertise* • *open source*

On December 1, 2018, on the margins of a gilets jaunes protest in Marseille, 80-year-old Zineb Redouane was struck in the face by a tear gas grenade as she was standing at the window of her fourth-floor apartment. The following day, she died in hospital.

In partnership with the French investigative media organization Disclose, the London-based research agency Forensic Architecture produced a counter-investigation into the circumstances of her death. The resulting report, published in video format in December 2020, provided evidence of the responsibility of the French police for her killing.

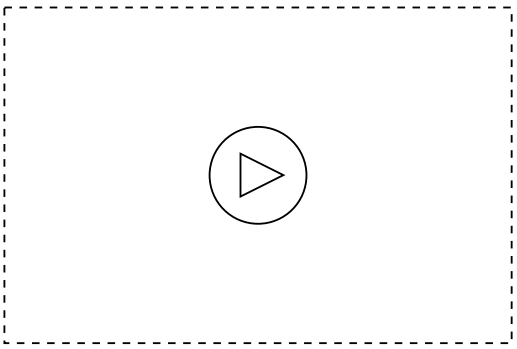
In the proposed publication, the lead researcher on the case for Forensic Architecture and the independent journalist / filmmaker who together authored the report use it as a case-study to discuss the methodology of image-to-space analysis for citizen investigations.

By revisiting the case, the publication brings questions of methods and techniques of visual analysis to the foreground, in an effort to discuss the benefits, as well as the limitations, of using such tools in the particular research framework of a citizen investigation: namely, one in which access to data is limited by underlying structures of power, and where the question of seeing beyond the established frame(s)—of images, of discourses—forms the primary research challenge.

By unpacking the argument presented in the counter-investigation of Zineb Redouane's killing, the publication uses the *video.able* format to deploy an multilayered, visual explanation of the techniques pioneered by Forensic Architecture to produce its investigative reports. In so doing, the aim of the publication is to foster the development, and widespread adoption, of open-source visual techniques for citizen investigations.

This contribution was published on www.able-journal.org in a video.able format:

www.able-journal.org/seeing-beyond-the-frames



FA
THE KILLING OF ZINEB REDOUANE
the Forensic Architecture research
agency and the Disclose media outlet

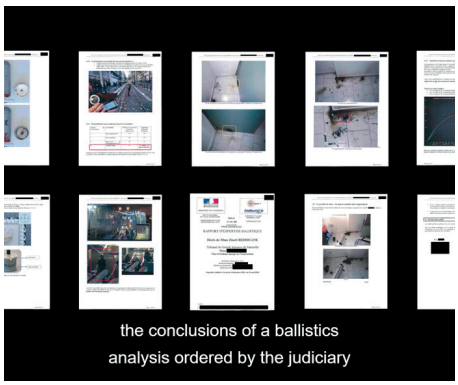
FA
DISCLOSE
THE KILLING OF ZINEB REDOUANE
investigated the circumstances
of Zineb Redouane's death.

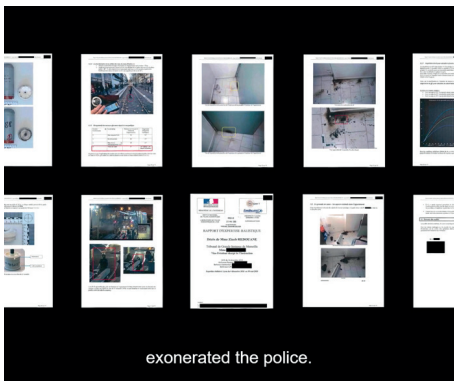
the 80-year-old French-Algerian
woman was hit by a tear gas grenade

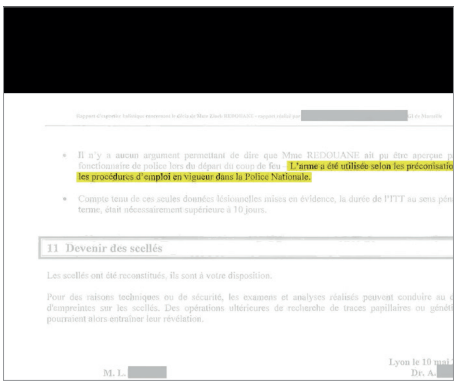
launched as she closed
the windows of her apartment,

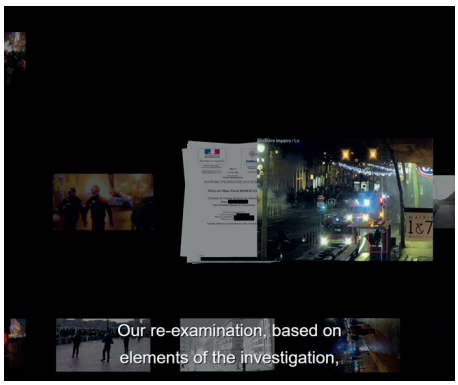
18h04
where demonstrators were marching
during Act III of the Gilets Jaunes protests.

18h04
Zineb Redouane died the next day.

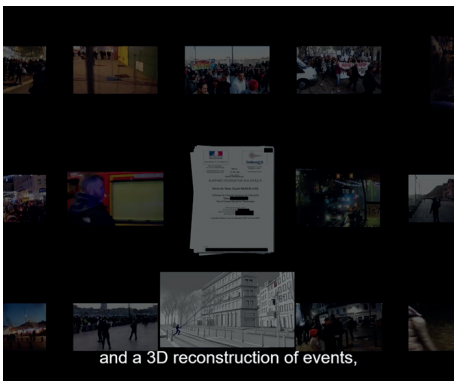

the conclusions of a ballistics
analysis ordered by the judiciary


exonerated the police.

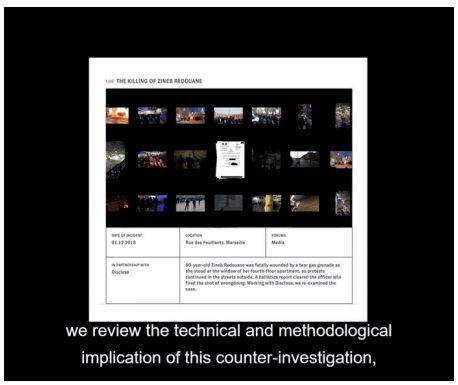

11 Devenir des scellés

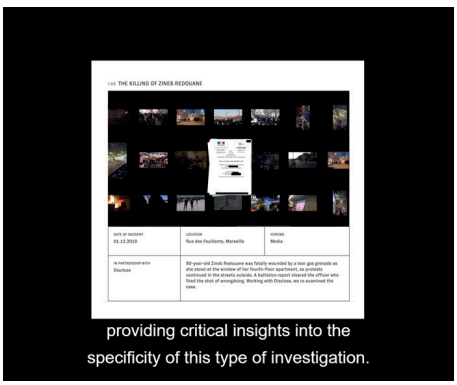

Our re-examination, based on
elements of the investigation,

amateur videos,


and a 3D reconstruction of events,

shows that the police are clearly
liable for the death of Zineb Redouane.


THE KILLING OF ZINEB REDOUANE
we review the technical and methodological
implication of this counter-investigation,


THE KILLING OF ZINEB REDOUANE
providing critical insights into the
specificity of this type of investigation.

"On the plaintiffs' side, from civil society,

The data, in general, is preprocessed,

it is often only isolated images,
images that have already been cropped,

and therefore when we investigate this kind
of case from the point of view of civil society,

we are always at a disadvantage
regarding the available means of investigation,

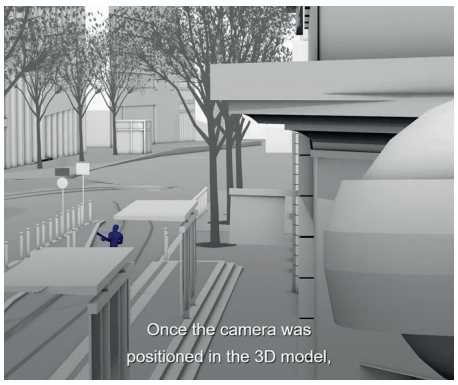
which must be balanced by other strategies."

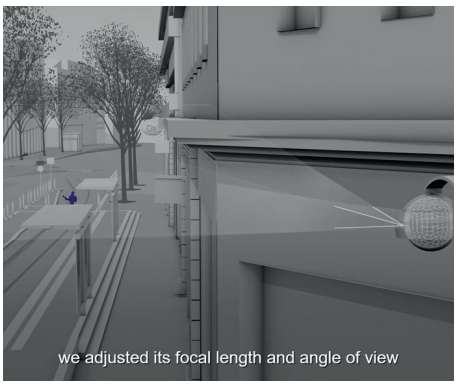
We therefore re-sequenced these still images

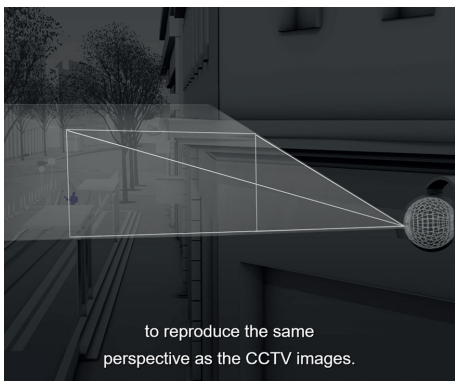
The next step was to reconstruct
the shooting in the space

we undertook detailed
3D modeling of the locations.

The exact position of the CCTV camera
could be determined using Google Street View.

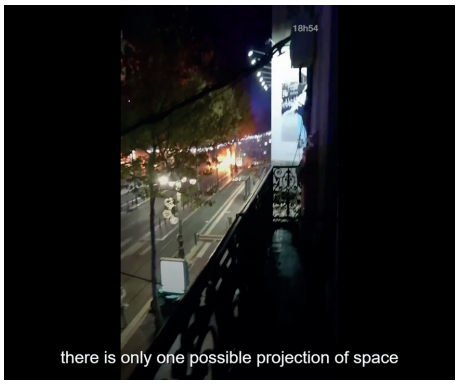

Once the camera was
positioned in the 3D model,

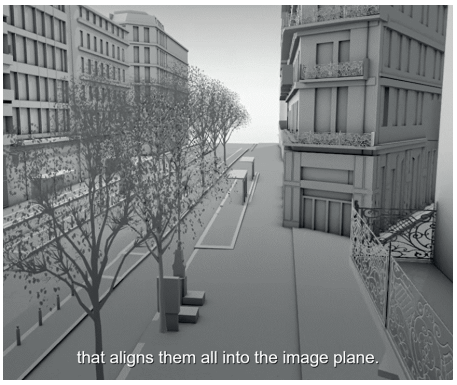

we adjusted its focal length and angle of view


to reproduce the same
perspective as the CCTV images.

We call this process
"frame matching."

Given the density of visible elements
in an image of an urban environment


there is only one possible projection of space

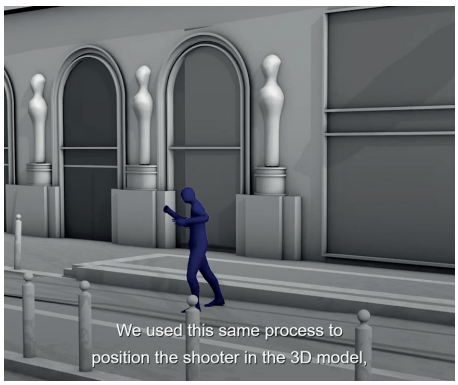

that aligns them all into the image plane.

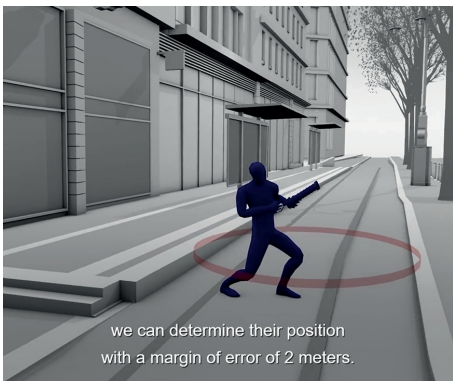
The information that had been
compressed in a two-dimensional image

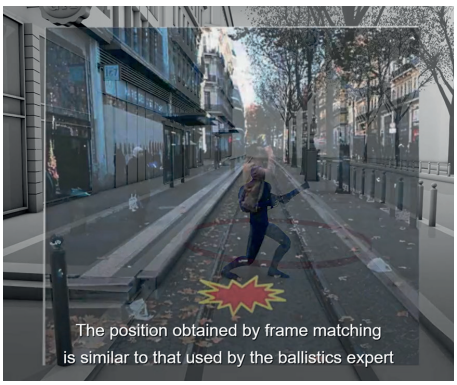
is expanded in a 3D space,

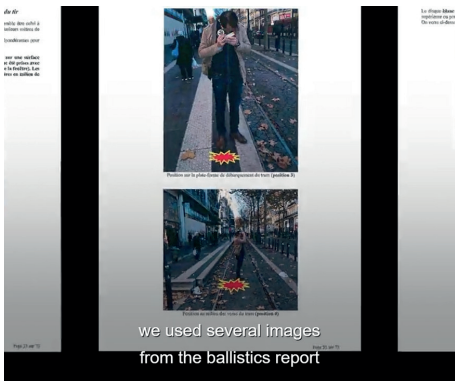
and the result is a localization of all the
elements visible in the image in their position,

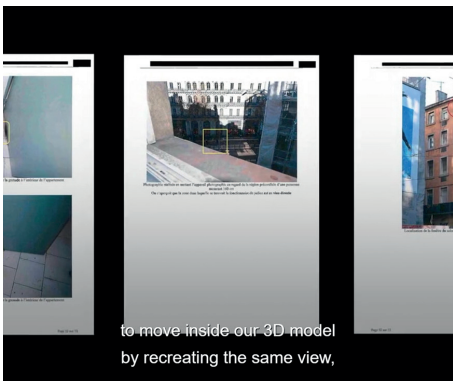
faithful to the reality as
captured by the image.

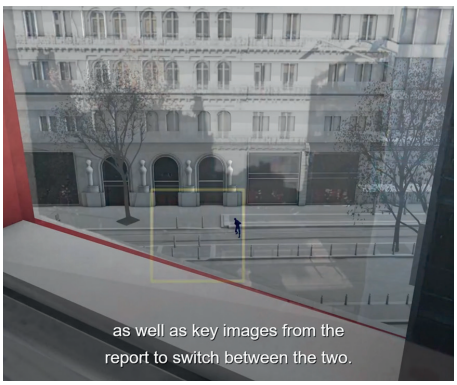

We used this same process to
position the shooter in the 3D model,


we can determine their position
with a margin of error of 2 meters.


The position obtained by frame matching
is similar to that used by the ballistics expert


we used several images
from the ballistics report


to move inside our 3D model
by recreating the same view,

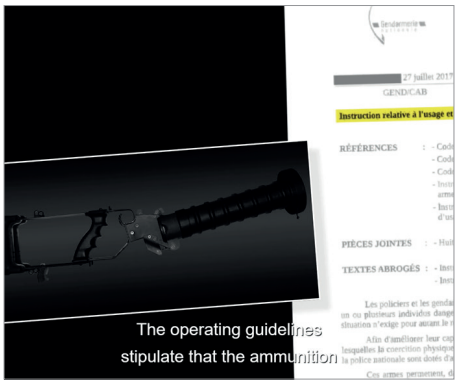

as well as key images from the
report to switch between the two.

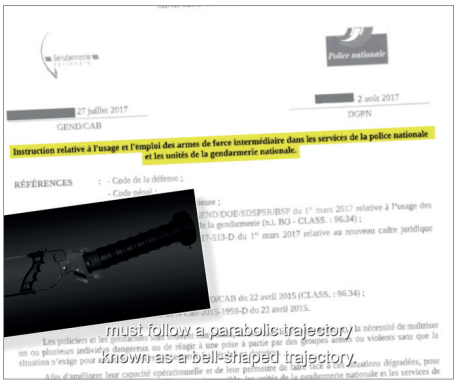
to establish a relation between
these two sources of information.

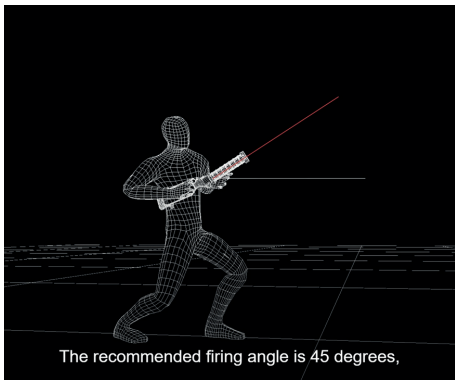
the audience is, in a sense,
in the position of a jury.

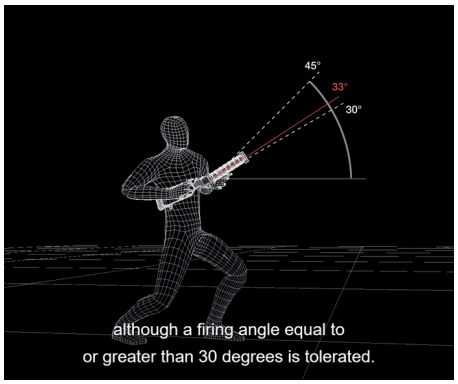
The next step in the investigation was

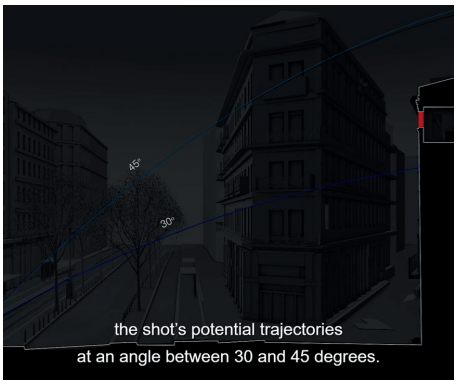
to produce a second expert
opinion regarding the ballistics.


Instruction relative à l'usage et
RÉFÉRENCES
PIÈCES JOINTES
TEXTES ABROGÉS
The operating guidelines
stipulate that the ammunition

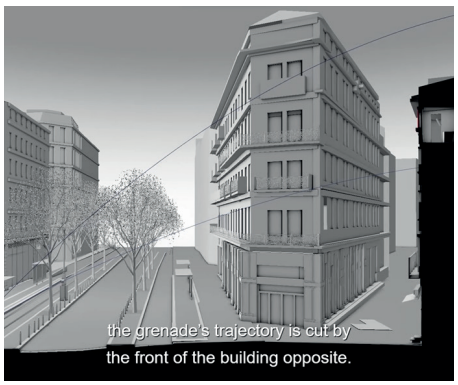

Police nationale
GEND/CAB
DGPN
Instruction relative à l'usage et l'emploi des armes de force intermédiaire dans les services de la police nationale et les unités de la gendarmerie nationale.
RÉFÉRENCES
must follow a parabolic trajectory
known as a ball-shaped trajectory.


The recommended firing angle is 45 degrees,


45°
33°
30°
although a firing angle equal to
or greater than 30 degrees is tolerated.

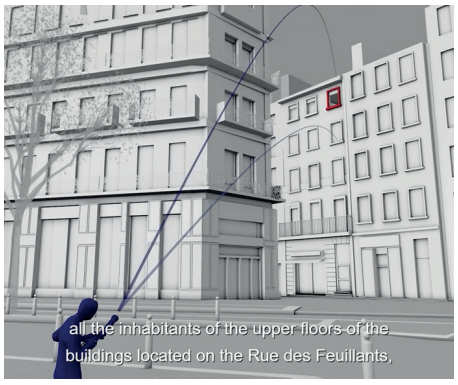

45°
30°
the shot's potential trajectories
at an angle between 30 and 45 degrees.

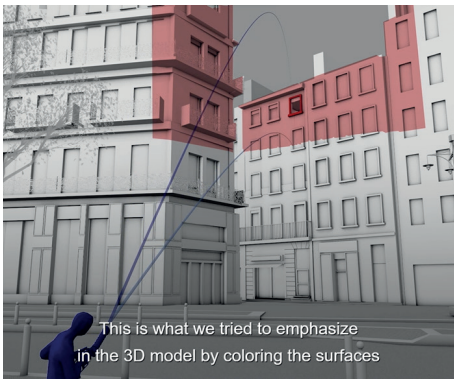
45°
30°
we see that whatever the firing angle,

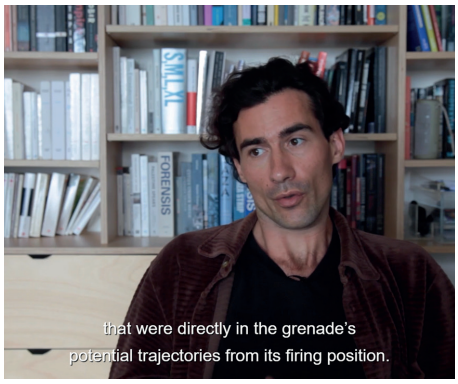

the grenade's trajectory is cut by
the front of the building opposite.

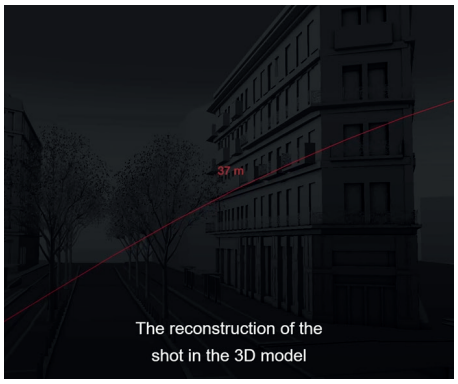
A shot from this position with a Cougar launcher

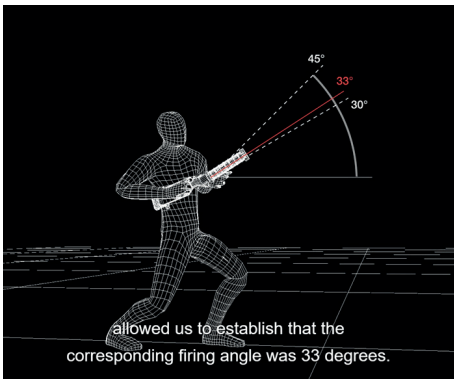
would necessarily endanger


all the inhabitants of the upper floors of the
buildings located on the Rue des Feuillants,

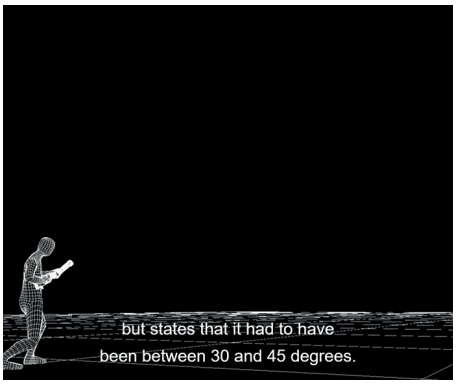

This is what we tried to emphasize
in the 3D model by coloring the surfaces


SMLM
FORENSIS
that were directly in the grenade's
potential trajectories from its firing position.


37 m
The reconstruction of the
shot in the 3D model


45°
33°
30°
allowed us to establish that the
corresponding firing angle was 33 degrees.

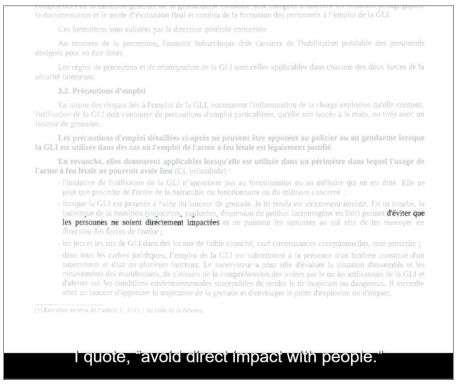
The ballistics expertise ordered by the
judiciary does not specify the exact angle,


but states that it had to have
been between 30 and 45 degrees.

concludes that the shot was lawful
based solely on the firing angle.

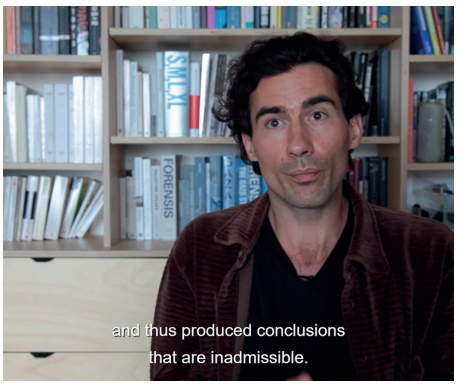
However, the same operating
guidelines also state that

that it is the shooter's responsibility
to pay attention to their environment


I quote, "avoid direct impact with people."

By omitting this crucial aspect
of the weapon's operating guidelines,

the expert failed in their
duty as an authority


and thus produced conclusions
that are inadmissible.

These civil investigations shake up
the framework of what can,

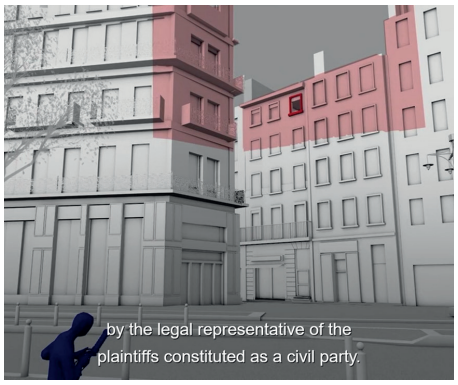
in a given context,
constitute a public truth.

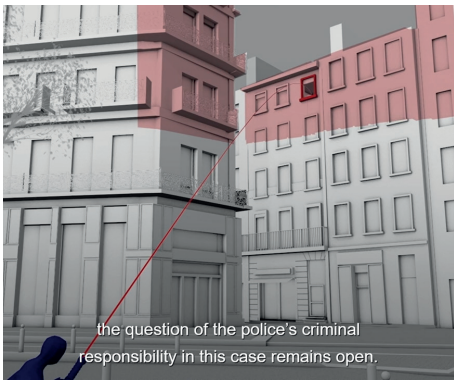
By relying on new image and
information technologies in particular,

these enquiries renegotiate
the terms of the relationship

between power and
public discourse.

The judiciary is still to rule on the
conclusions of the ballistics report





credits

"The Killing of Zineb Redouane," Forensic Architecture investigation team:

project coordinator: Francesco Sebregondi

researcher: Martyna Marciniak

video editing: Emile Costard

Disclose team: Mathias Destal, Magali Serre

acknowledgments: "Collectif Désarmons-Les" ; Milfet Redouane.

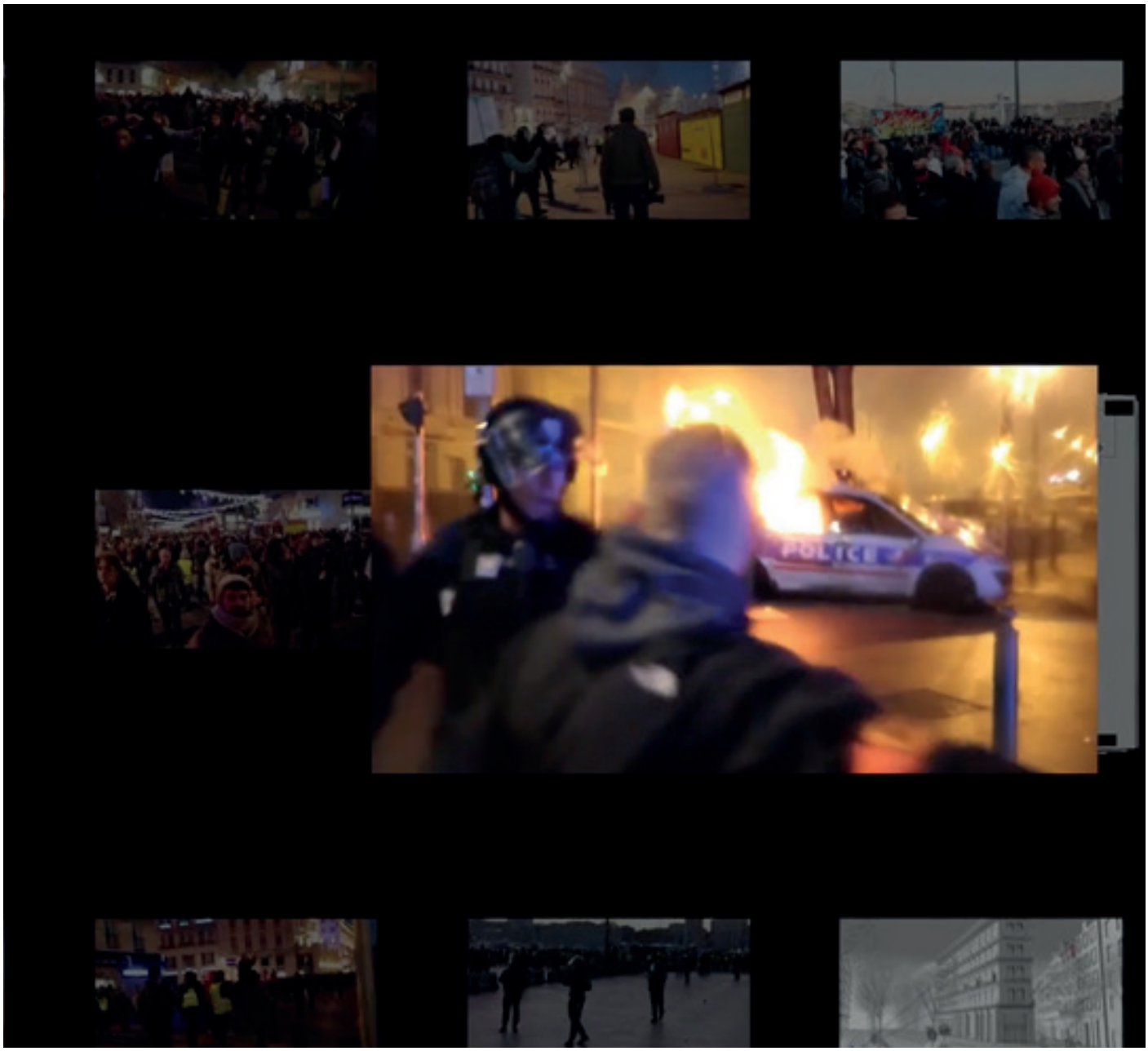
about the authors

Emile Costard, a journalist and director has specialized for several years in the production of investigative videos for online media. A regular contributor to the newspaper Le Monde since 2013, he has recently worked for the BBC, Médiapart, Disclose, and the Forensic Architecture research laboratory.

https://emilecostard.fr/

Francesco Sebregondi (PhD) is an architect and researcher. His work explores the intersection of violence, media, and the urban condition. From 2011 to 2020, he was a researcher and project coordinator at the Forensic Architecture research lab. In 2021, he founded and is the director of the independent expertise agency INDEX. He is currently a research associate at EnsadLab.

https://fsbrg.net
https://index.ngo



rights and references

illustration rights and references

Video shot by anonymous neighbor of Zineb Redouane, December 1, 2018, 18h04. Rights reserved.

Portrait of Zineb Redouane, date unknown. Courtesy of Milfet Redouane.

Google Maps / Google Street View, Views of Noailles district in Marseilles (France), Map data. Photos © 2020 Google Maps / Google Street View. Reproduced with permission.

All other images by Forensic Architecture. © Forensic Architecture. Reproduced with permission.

bibliography and references

Weizman, Eyal, Shela Sheikh, Susan Schuppli, Francesco Sebregondi, and Anselm Franke, eds. *Forensis: The Architecture of Public Truth.* Berlin: Sternberg Press, 2014.

Weizman, Eyal. *Forensic Architecture Violence at the Threshold of Detectability.* New York: Zone Books, 2019.

to cite this article

Sebregondi, Francesco and Emile Costard. 2023. “Seeing Beyond the Frame(s): a Case Study of Image-to-Space Analysis for Citizen Investigation.” *.able journal*: https://able-journal.org/seeing-beyond-the-frames

MLA	EN	Sebregondi, Francesco, and Emile Costard. “Seeing Beyond the Frame(s): a Case Study of Image-to-Space Analysis for Citizen Investigation.” *.able journal*, 2023. https://able-journal.org/seeing-beyond-the-frames
ISO 690	EN	SEBREGONDI, Francesco, and COSTARD, Emile. Seeing Beyond the Frame(s): a Case Study of Image-to-Space Analysis for Citizen Investigation. *.able journal* [online]. 2023. Available from: https://able-journal.org/seeing-beyond-the-frames
APA	EN	Sebregondi, F., & Costard, E. (2023). Seeing Beyond the Frame(s): a Case Study of Image-to-Space Analysis for Citizen Investigation. *.able journal*. https://able-journal.org/seeing-beyond-the-frames