

Forensic Architecture [redacted]
[redacted]
[redacted]
[redacted]
[redacted]
[redacted]

Goldsmiths, University of London
8 Lewisham Way
London SE14 6NW
United Kingdom

forensic-architecture.org

The Killing of Sammy Baker

Findings and Methodology Report

November 2023

Investigation and report by

Forensic
Architecture

Forensis



TABLE OF CONTENTS

- BACKGROUND..... 3**
- SUMMARY OF FINDINGS 4**
- SOURCE MATERIALS 4**
- TIMELINE OF EVENTS..... 9**
- METHODOLOGY 11**
 - 1.1. SUMMARY OF THE VIDEOS WITHIN THE SOURCE MATERIAL..... 11
 - 1.2. VIDEO ANALYSIS..... 11
 - 1.2.1. *Synchronisation* 11
 - 1.2.2. *Footage speed, zoom and analysis*..... 12
 - 1.3. 3D RECONSTRUCTION 12
 - 1.3.1. *Site model*..... 12
 - 1.3.2. *Photo matching* 13
 - 1.3.3. *3D camera tracking* 14
 - 1.3.4. *Modelling the officers’ body positions and locations* 14
 - 1.3.5. *Modelling Baker’s body position and location* 16
 - 1.3.6. *Baker’s body position* 20
 - 1.4. DATA FROM FIREARMS ANALYSIS 21
 - 1.5. AUDIO ANALYSIS OF THE SHOTS 22
 - 1.5.1. *Determining which officer fired which shot*..... 23
- VIDEO EVIDENCE COMPARED TO THE TESTIMONY OF POLICE OFFICERS, AND THE STATEMENTS OF THE OM..... 25**
 - 1.1. BAKER IS NOT SEEN ‘WAVING A KNIFE’ WHILE HE WALKS..... 25
 - 1.2. THE DOG HANDLER DID NOT FALL TO THE GROUND WITH BAKER 28
 - 1.3. BAKER DOES NOT ‘CALL FOR A DOCTOR’ DURING THE PERIOD CAPTURED ON VIDEO 32
- BAKER’S BODY POSITION DURING THE PERIOD OF THE SHOTS 32**
 - 1.1. WHERE BAKER’S BODY IS VISIBLE DURING THE PERIOD OF THE SHOTS 32
 - 1.2. WHAT IS NOT VISIBLE IN THE AVAILABLE VIDEO MATERIAL 38
 - 1.3. BAKER’S BODY POSITION DURING THE PERIOD OF THE SHOTS 39
 - 1.3.1. *At the time of shot 1*..... 39
 - 1.3.2. *At the time of shot 2/3* 44
 - 1.3.3. *The position of Baker’s legs after the fourth shot* 49
 - 1.4. WAS BAKER AN ‘IMMINENT DANGER’ TO THE OFFICERS IMMEDIATELY BEFORE HE WAS SHOT? 51
 - 1.4.1. *Did Baker swing his knife immediately before he was shot?*..... 51
 - 1.4.2. *Did Baker swing his knife prior to the leg swing?*..... 55

Background

Sammy Baker was shot to death by police in Amsterdam on 13 August 2020. On the evening of 10 August, Baker consumed cannabis with his friends, which, it is posited, triggered an episode of psychosis. After being missing and largely out of contact for two days, Baker was found by his mother and a friend in the suburb of Amsterdam-West. When a police officer approached them at the friend's request, Baker, still in psychosis and apparently distressed by the appearance of police officers, ran away. The foot chase which followed began a series of events which led to Baker's death.

Baker was carrying a small, legal, pocket knife, with which, according to police testimony and pathology evidence, he repeatedly tried to cut himself during the encounter. According to the testimonies of officers involved in the incident, Baker was shot to death after attempting to stab an officer with the pocket knife.

At the invitation and request of Baker's family, Forensic Architecture (FA), a research agency based at Goldsmiths, University of London, and the associated independent NGO Forensis e.V (henceforth referred to jointly as 'FA/Forensis') investigated the circumstances around Baker's death using techniques including digital modelling, spatial reconstruction, and video/image analysis to investigate potential cases of rights violations, including deaths in police custody.

Our investigation sought to:

- Reconstruct within a 3D digital environment the moments preceding Baker's death, by extrapolating between 2D video and image sources;
- Examine police testimony in light of the results of that digital reconstruction;
- As far as possible, contribute insights from that reconstruction towards the questions of whether Baker's death was inevitable, and whether alternative policing strategies could have led to a different outcome.

The incident was filmed by a number of bystanders, apparently residents of the nearby buildings. The resulting videos provide key information about how that incident played out, and the actions of Baker and the officers. However, these videos are unstable, and do not capture all parts of the incident clearly or consistently. FA/Forensis' techniques have been developed for precisely such circumstances and involve a range of methodologies developed to make such footage more amenable to analysis.

Following initial discussions with Baker's parents, FA/Forensis sought independently to acquire material that would be relevant to their investigation, including material from the initial investigation into the case by the Dutch public prosecutor, the Openbaar Ministerie (OM).

Separately, FA/Forensis were introduced by Baker's parents to their lawyer, Richard Korver, of the firm Richard Korver Advocaten. Korver agreed to confirm to the best of his ability the veracity or otherwise of any documents or files that FA/Forensis was able to independently acquire.

Summary of findings

On the basis of the analysis outlined in this document, we arrive at the following findings:

Finding 1: In the moments preceding Baker's death, his body position was not one which would routinely be considered threatening or dangerous. He was lying on his back, with his lower back on the ground and shoulders on or near to the ground, with his legs above his waist.

Finding 2: The post-incident testimonies of police officers involved at the scene of Baker's death were not always consistent with the video evidence.

Finding 2.1: Contrary to the testimony of three officers, the officer in charge of the police dog (the 'dog handler') did not fall to the ground with Baker.

Finding 2.2: Contrary to the contemporaneous observations from the scene as recounted by the officer-in-charge in their post-incident testimony, Baker did not 'wave' the pocket knife at officers, or make any threatening action whatsoever towards the officers during the time that he was visibly upright and walking through the courtyard.

Finding 3: Given that Baker was lying on his back, with his legs above his waist, in the moments preceding his death (per **Finding 1**), if the police officers involved had taken a step backwards at any time while Baker was on the ground, they could have easily removed themselves from any potential or perceived danger.

Finding 4: Some of the auxiliary conclusions drawn by the OM are not supported by the available video evidence. Contrary to the conclusion of the OM, Baker is not captured on video calling for a doctor at any time after the dog handler brings him to the ground.

Source materials

The investigation and findings outlined in this document are the result of analysis by FA/Forensis of a set of digital documents, including materials that were to our understanding commissioned and/or produced in the course of the investigation by the OM. That material includes witness statements, transcripts of radio communications, forensic reports on matters of ballistics and pathology, plans and drawings, photographs, and videos. Our investigation also draws on two independently commissioned expert reports.

Most of the text in the source material was in Dutch. While approximate translations can be obtained using free-to-use digital tools, we commissioned an independent, accredited Dutch-English translator

to provide approved translations of key text passages. The accredited translator was Joy Phillips of the Language Collective, Wbtv no. 2157.

FA is an academic research agency conducting research in the public interest, in accordance with the chartered objectives of Goldsmiths, University of London. Forensis is an association whose charitable purposes include supporting persons and groups of persons who are affected by human rights violations, particularly by making available to the public evidence of potential rights violations.

The activities of both organisations are demonstrably journalistic and oriented toward public interest goals, and as such, the agencies have a protected right to work with privileged materials, including materials produced in the context of a police investigation or legal process, to publish from those materials, and to refuse to disclose the sources of that information.

The source materials relied upon throughout the report are listed below, including the internal reference code by which they are referred to.

1. Footage

	Source material file name	Internal reference code
	1_trampoline_1 IMG_6813	Video 1
	2_trampoline_2 IMG_3527	Video 2
	3_trampoline_3 IMG_3528	Video 3
	4_trampoline_4 IMG_3529	Video 4
	5_trampoline_5 IMG_3530	Video 5
	6_trampoline_6 IMG_3531	Video 6
	7_trampoline_7 IMG_3532	Video 7
	8_trampoline_8 IMG_3533	Video 8
	9_trampoline_9 IMG_3534_koops	Video 9
	10_trampoline_10_walking_1f959f75f-42cd-406b-9b6d-8c17e457d012	Video 10
	11_walking_2 IMG_9219	Video 11
	12_walking_3 IMG_3535_koops	Video 12

	13_walking_4 IMG_3536_koops	Video 13
	14_walking_5 20210527 Video	Video 14
	15_walking_6_Ruben koops Twitter	Video 15
	16_walking_7 FIUD6194.MP4	Video 16

2. Officers Witness Statements

Source material file name: 1e Proces-verbaal 20200072 dossier Milau deel 1 van 2 (Duitse versie)

Original document code	Subject (ENG)	Internal document reference code	Internal officer reference code
2008141000.STOOD93 –	Witness Examination	WE_O1	O1
2008141310 86 -	Witness Examination	WE_O2	O2
20081710000. 92	Witness Examination	WE_O10	O10
BOTHJ68.DOC	Witness Examination	WE_O3	O3
2008171400. 5	Witness Examination	WE_O8	O8
MEESF89.DOC	Witness Examination	WE_O9	O9

Source material file name: 1e Proces-verbaal 20200072 dossier Milau deel 2 van 2 (Duitse versie)

Original document code	Subject (ENG)	Internal document reference code	Internal officer reference code
2008191010.HAMEM97.DOC	Witness Examination	WE_O5	O5
2008251000.BONEH71.OOC	Witness Examination	WE_O4_1	O4
2009101415.BONEH71	Additional Interrogation OVDP	WE_O4_2	O4
2008191400. D91	Witness Examination	WE_O6	O6
2008190954.KLOOJ8S	Witness Examination	WE_O7	O7

--	--	--	--

3. Other Documents

Source material file name: 1e Proces-verbaal 20200072 dossier Milau deel 2 van 2 (Duitse versie)

Original document code	Subject (ENG)	Internal document reference code
20200072	Witness Examination M. Riepl	WE_MR
2009251400	Witness Examination S. Adamczyk	WE_SA
2008311532.AMB	Investigation of radio and walkie-talkie conversations between police officers of the Amsterdam police unit and the control room of the Amsterdam police unit.	Radio communications (RC)
2010191300.AMB	Examination of image files	Image file examination
2010121415.AMB	Bodycam footage	Bodycam footage
2010301533.DOC	Video evaluation of the case of Samuel Seewald Maximilian Riepl 30.10.2020'	Video evaluation

Source material file name: 2e proces-verbaal rijksrecherche 20200072 - onderzoek milau_ (Duitse versie)

Original file name	English translation	Internal document reference
Rijksrecherche Proces Verbaal	Rijksrecherche Official Report	Rijksrecherche Official Report (ROR)

Source material file name: Beslissing tot al dan niet vervolgen inzake Milau d.d. 17-05-2021

Original file name	English translation	Internal document reference
Beslissing tot al dan niet vervolgen inzake Milau	Decision whether or not to prosecute regarding Milau	OM conclusion (OMC)

4. Autopsy report

Source material file name: 20200307_Obduktionsbericht Samuel Rubin

Seewald_Gesamtdokument_de

Source material file name: 20230308_Rechtsmedizin Gießen_Nachsektion

Source material file name: Obduktionsbericht Samuel Rubin Seewald_nl

Original document name	Author	Date	English translation	Internal reference code
Schouwverslag	Hoftzing, Forensic Medical Examiner, KNMG	13.08.2020	Investigation Report,	A1
Unit Forensische Radiologie	Masstricht UMC+	14.08.2020	Department of Forensic Radiology	A2
Unit Forensische Radiologie, Radiologisch relevante metaal dense structuren	Masstricht UMC+	14.08.2020	Forensic Radiology Unit, Metal Dense Structures	A3
Sectierapport	Nederlands Forensisch Instituut	14.08.2020	Autopsy Report	A4
Unit Forensische Radiologie, Definitief Sturingsverslag	Masstricht UMC+	14.08.2020	Department of Forensic Radiology, Final Report	A5
Forensische Radiologie, Radiologisch onderzoek naar aanleiding van een mogelijk niet natuurlijke dood	Maastricht UMC+	26.08.2020	Forensic Radiology, Radiological examination in the case of a possible non- natural death	A6
Pathologieonderzoek naar aanleiding van een mogelijk niet-natuurlijke dood,	Nederlands Forensisch Instituut	02.09.2020	Pathological Examination after Possible Unnatural Death	A7
Bijlage 1 Uit- en inwendige schouwing	Nederlands Forensisch Instituut	02.09.2020	Annex 1 External and Internal Examination	A8
Ergänzende rechtsmedizinische Stellungnahme	Prof Dr.Dr. R. Dettmeyer, Institut Für Rechtsmedizin	08.03.2023	Supplementary Forensic Opinion	A9
			Autopsy images	A10

5. Draft expert reports

Original document name	Author	Date	English translation	Internal reference code
Gutachterliche Stellungnahme zum Polizeieinsatz am 13.08.2020 in Amsterdam im Zusammenhang mit dem Tod von Samuel Seewald.	Prof. Dr. IUR. T. Feltes M.A		Expert opinion on the police operation on 13.08.2020 in Amsterdam in connection with the death of Samuel Seewald	B1
Model Deskundigenbericht	Dr. A.F.R.R, Van Reijssen		Model expert report	B2

Timeline of events

Shortly before 16:45 on 13 August, Baker’s mother, Justine Seewald-Krieger, and a friend of Baker, found Baker in Amsterdam-West. The friend asked a passing police officer for assistance. Baker, apparently distressed by the presence of the officer, ran away. Officers pursued him.

Sometime before 16:47, Baker was cornered by officers in a courtyard between two residential blocks. According to police testimonies, Baker tried to climb a high fence. In response, an officer used pepper spray against him.

At 16:47:19, the first video recording of the scene that was viewed by FA/Forensis begins. At this time, Baker was hidden from the camera by bushes. He was likely sitting or crouching near the fence. At that time, two police officers (O1 and O6) were standing a short distance away from Baker.

At 16:48:10 a third officer arrived on a motorcycle. Officer O1 drew his firearm. Over the following two minutes, he aimed the firearm intermittently towards Baker.

At 16:50:34 Baker stood up; his head became visible over the bushes, from the perspective of the video camera recording the scene. Officers O1 and O6 continued to intermittently point their firearms at Baker. Officers made sporadic attempts to contact Baker during this time.

At 16:57:54 Baker began to walk very slowly in the direction of the officers.

At 16:58:04, the ambulance which had arrived on scene some time previously was for the first time visible in the video recordings viewed by FA/Forensis.

At 16:58:31, a paramedic was visible in the video recording, standing near to the fence.

At 17:00:04, Baker stopped walking towards the officers. He was by this time standing in a narrow corridor between two rows of bushes. He had moved approximately 20-25 metres in 2min 10s. During that time officers threatened to shoot Baker. Officer O3, in control of a police dog, approached Baker from behind.

At 17:00:04 The police dog ran past Baker, in the direction of the officers in front of him, which brought the police officer into close proximity with Baker.

At 17:00:06 officer O3, the dog handler, physically attacked Baker, wrapping his right arm around Baker's neck, and pushing Baker to the ground.

Between 17:00:06 and 17:00:13 Baker was surrounded by eight police officers. Baker's arms and legs were at times briefly visible to the cameras recording the scene, through the thick hedgerows on either side of the path. However, no camera's view of the scene is clear, or consistent.

At 17:00:13:F01¹ the first shot was fired at Baker. A total of four shots were fired, and Baker was hit twice. Two officers fired two shots each. It is known which officer's firearm was responsible for one of those injuries, but not the other. It is not possible to identify which of the two four shots hit Baker, and which did not. At 17:00:13:F16 two more shots are fired, and at 17:00:14:F00 a fourth shot is fired.

¹ Throughout this report, the notation 'F01', 'F02', etc., will be used to indicate the time of a given event (as seen in video footage) at a sub-second level of precision. Since the video footage available to FA/Forensis is recorded at 30 frames per second (FPS), the duration of an individual frame is 0.0333...s. For example, therefore, there are 0.0333...s between 17:00:00:F00 and 17:00:00:F01, another 0.0333...s between 17:00:00:F01 and:F02, and 1.333...s between 17:00:00:F00 and 17:00:01:F10.

Methodology

1.1. Summary of the videos within the source material

Our source materials included 16 videos² which together captured approximately 14 minutes of the incident. That 14-minute period began at 16:47:19, when Baker was cornered by officers in a residential courtyard, and ended at 17:01:06, less than a minute after Baker was shot.

The videos were recorded from various balconies throughout the buildings surrounding the courtyard. Three of those videos (14, 13/15, 16) captured the period of the shots, from three different perspectives.

However, thick bushes on either side of the path along which Baker encountered the police, block the view and only parts of Baker's body are at times, briefly visible in the footage. This fact necessitated the application of FA/Forensics' techniques of video analysis and digital reconstruction.

1.2. Video analysis

1.2.1. Synchronisation

Before video sources can be analysed, we 'synchronise' them with one another, using Adobe's After Effects software.³ Synchronisation is the process of aligning each video with the others, and with 'real time', by identifying and matching features and events which occur across different sources, or by identifying and corroborating metadata encoded in the files themselves.

In this case, 13 of the 16 videos within our source materials had metadata which anchored them to real time; the remainder were 'synced' using visual and aural cues. The resulting 'sync' is a multi-screen composite video as in Fig. 1.

² Our source materials contained a total of 16 separate video files, but there was some overlap between the content of the videos. For example, what we have labelled 'Video 14' is a shortened version of 'Video 10'. Videos 13 and 15 are two versions of the same video, with different video and audio resolution.

³ <https://www.adobe.com/products/aftereffects.html>



Fig. 1

1.2.2. Footage speed, zoom and analysis

By viewing such a 'sync' file within After Effects, we can closely examine the sequence of an incident, frame-by-frame, from multiple perspectives. In this case, that frame-by-frame, multi-perspective analysis allowed us to identify and closely any moments at which parts of Baker's body were visible through the bushes.

1.3. 3D reconstruction

3D digital models of a 'real world' environment help us to understand the components of an incident – individuals, events, or camera positions, for example – in relation to one another. Together with the 'sync' file, we can use these models to follow and/or interpolate actions and trajectories through time and space.

All 3D reconstruction was done using the open-source 3D modelling software Blender.⁴

1.3.1. Site model

⁴ <https://www.blender.org/>

We commissioned a licensed drone pilot to conduct an extensive photographic survey of the area, and to process those into a precise 3D 'photogrammetry' model of the courtyard.⁵ At the time of the drone capture, a significant portion of the bushes apparent in the incident videos had been cleared. We reconstructed these bushes within the 3D digital space employing a method known as photo matching (see 1.3.2.).

This model forms the basis of the 3D environment in which we analyse the content of the video materials, examine the content of reports or testimony in light of that analysis, and later communicate the results of that analysis and examination in the form of animated video sequences.



Fig. 2

1.3.2. Photo matching

Within a 3D digital reconstruction of the 'real world' location of an incident, we precisely place models of individuals and objects, to accurately reconstruct moments within that incident. We derive the precise

⁵'Photogrammetry' is a process by which large numbers of still photographs, of an object or environment, can be combined to create a precise and navigable 3D model.

Photogrammetry software, such as Metashape or Agisoft, computes distances within a 2D image by a process of triangulation, taking into consideration metadata like the focal length of the lens of the camera that captured the image. The software then arranges every pixel from multiple overlapping images in 3D space, creating a 'point cloud' made of hundreds of millions of individual pixels, or 'points'.

location of individuals and through a process of reconstructing the position and perspective of a piece of video material, a technique developed by FA and known as photo matching.⁶

1.3.3. 3D camera tracking

Associated with 'photo matching' is a technique known as 'camera tracking'. Camera tracking is essentially photo matching through time: when a real-world camera is 'tracked', its location and movement through a real environment (and by implication, the person operating it), as well as its direction, and focal length, is recreated within a digital reconstruction of that environment. That reconstruction takes place in a 3D animation software such as (in this case) Cinema 4D.⁷ The software analyses visual data in the video material, tracking the movement of identifiable collections of pixels across the video frame, to recreate the camera's movement through space, and across time.

In the case of Baker, we 'tracked' and 'photo matched' three videos that capture the period of the shots (14,13/15,16). Now that the camera positions in digital space accurately reflect their respective positions in the real world (Fig. 3), we can begin to carefully reconstruct the locations of the officers, and Baker, according to their locations in the videos.



Fig. 3

1.3.4. Modelling the officers' body positions and locations

⁶ 'Photo matching' begins by placing the frame of a video inside our digital model as a semi-transparent 'foreground object' in Blender. Using a 'camera object' – a set of virtual parameters inside the software which simulate the view settings of a real camera – our researchers replicate the position, angle, and focal length of the video frame within the digital model. Using these simulated cameras in the 3D model, along with the corresponding footage superimposed onto the scene, we are then able to analyze the incident from multiple perspectives, including the positions of and distances between the various actors.

⁷ <https://www.maxon.net/en/cinema-4d>

The process of modelling and placing human figures into our 3D environments begins with standardised 3D model figures, which are 'rigged' using a software called Mixamo.⁸ 'Rigging' the models essentially gives them a 'skeleton', allowing them to be precisely posed in different positions, mimicking human body positions.

What follows next is an iterative process of positioning the model figures of the officers in the digital model to precisely match their real-world locations at key moments during the incident. The process begins by triangulating the position of an officer as seen from different perspectives (for the positions of officers at moments during the period of the shots, we examine their positions as seen in videos 14, 13/15, 16).

This is an iterative process: increasingly fine adjustments are made to each of the relevant variables (such as position and orientation of the camera, or size and position of the modelled figure) until the position of the modelled figure aligns well with the position of the individual in the real world, across multiple camera perspectives (see Figs. 4 and 5).



Fig. 4

Fig. 4, above, shows a 'camera position' within our digital model, together with models of the officers positioned in digital space, to match the locations captured in the video footage from that camera position.

⁸ <https://www.mixamo.com/>



17:00:05 F12

Fig. 5

Fig. 5, above, shows the same 'camera position' as in fig. 4, but this time viewed from a position such that the camera frame and the digital model line-up precisely.

1.3.5. Modelling Baker's body position and location

At issue in this case is precisely Baker's body position in the moments immediately preceding the shots; to our understanding, the question of whether and how Baker could have been considered a danger or threat to officers at the time that the decision was made to fatally shoot him, is at least partly a function of his body position at that time, as well as the spatial relationship between Baker and nearby officers at that time. We sought to deploy our techniques of digital reconstruction towards expanding what can be known about both Baker's body position, and his location and position in relation to nearby officers.

1.3.5.1. Data from autopsy reports

Our source materials contain a document described as an 'Autopsy Report' (A4), which includes several documents (A1, A2, A3, A5, A6, A7, A8) from different forensic departments (Forensic Radiology, Forensic Pathology.) We also reviewed the Supplementary Forensic Opinion commissioned by Baker's family (A9).

These documents contained information regarding entry and exit wounds, the paths of each bullet through Baker's body and the final internal resting location of one bullet (as well as regarding injuries to Baker's body apparently caused by the pocketknife he was reportedly carrying, bite marks presumably caused by the police dog, and other injuries including bruising). At times, the reports differed slightly in the information that they presented, for example in the precise location of entry/exit

wounds (table 1). In such cases, we aggregated and cross-referenced the information as presented across the different reports.

Document	Location of entry wound A (translated)
A1	Outside of the right upper arm, about 10 cm below the shoulder.
A2	n/a
A3	n/a
A4	On the extensor side of the upper right arm, about 14 cm towards the hand from the shoulder point, there was an oval skin perforation about 1 x 0.8 cm (A, entry wound)
A5	n/a
A6	<i>Image showing the wound</i>
A7	On the extensor side of the right upper arm, about 14 cm palmward from the tip of the shoulder, there was an oval skin perforation of about 1x0.8 cm (A, bullet hole)
A8	On the extensor side of the right upper arm, approx. 14 cm palmward from the tip of the shoulder, an oval skin perforation of approx. 1x 0.8 cm with superficial skin damage of the wound edges (abrasion ring). The wound was a bullet hole

Table 1

The conclusion of those reports reviewed by FA/Forensis is as follows: Baker was killed by two fatal shots, one that entered his right arm, travelled across his upper body and ended in his left upper flank. Another that entered his right-side body, travelled across his body, exited in his left side body, then entered his left arm where the bullet ended.

The Autopsy Report (A4) describes three shot paths:

- Shot path SP1 begins at Baker’s upper right arm (labelled as entry point A in A4) to the internal resting location of the projectile near to his left armpit (labelled as location P2 in A4).
- Shot path SP2 begins at Baker’s mid right-side body (labelled as entry point C in A4) and exits his body on the left side of his torso (labelled as exit point D in A4). Shot path 3 is from entry point B in Baker’s left upper arm to bullet location P1 in his left upper arm.
- Shot path SP3 begins at the inside of Baker’s left upper arm, just above his elbow, and ends just a few centimetres into his left upper arm.

It is overwhelmingly likely that SP2 and SP3 are in fact the same shot path. A document titled ‘Pathological Examination After Possible Unnatural Death’ suggests that the possible shot path SP3 may be an extension of SP2:

“Entry wound 8 could be placed as an extension of the perforating gunshot wound C-D and could therefore possibly have been caused by the same projectile.” (A7, p140)

This is supported by the findings of the Supplementary Forensic Opinion:

“This finding concerning the external skin wound and the low penetration depth on the left arm support the assumption that the projectile, which completely penetrated the lower level of the

chest with a so-called bi-cavity injury (dissipation of energy), then penetrated the skin on the left upper arm with weak residual energy and immediately thereafter remained under the muscle skin, lodged in the left arm. The arrangement of the firing gaps also easily matches a flight path. Such an assumption was probably also raised during the first autopsy.” (P.03 A9)⁹

FA/Forensis independently consulted a forensic firearms analyst who confirmed that the bullet very likely passed through the body without hitting anything which could damage it or divert it from its path, and immediately re-entered the arm.

1.3.5.2. Mapping Baker’s injuries onto a digital model

Since we had access, via Baker’s parents, to photographs of Baker, we were able to produce a digitally modelled figure which closely matched Baker’s overall body proportions. (The iterative process of matching a digital human figure model to a real-life human body is similar to that described in section 1.3.4., and also relies upon the ‘rigging’ process referred to in that section.) The modelled figure has a height of 175cm, corresponding to Baker’s height as detailed in the Autopsy Report (A4).

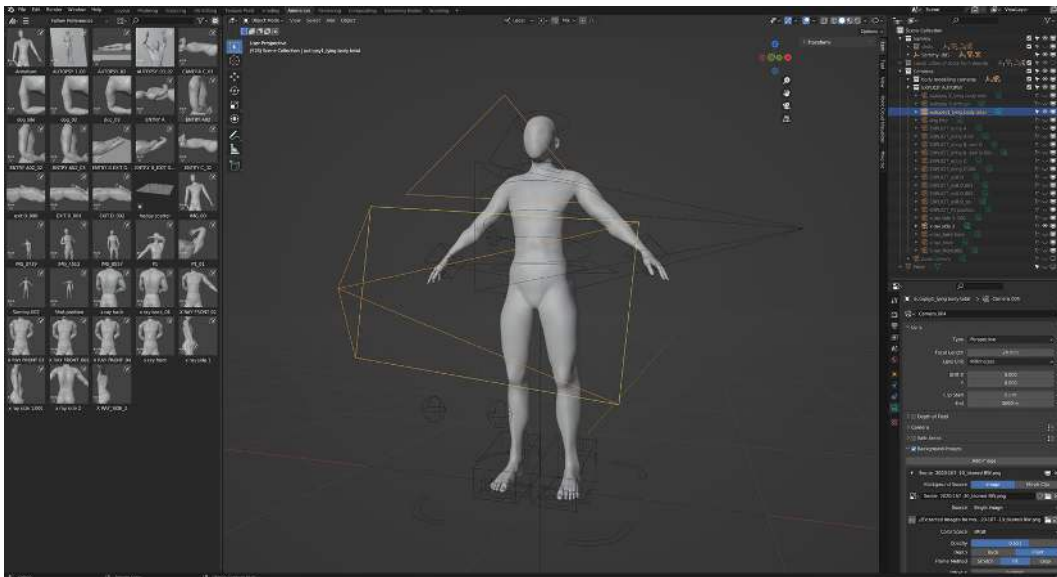


Fig. 6

Next, we ‘photo matched’ images from autopsy (A10) onto our model figure of Baker. This allows us to mark the entry and exit wounds on the model figure.

⁹ “Dieser Befund an der äußeren Hautwunde und die geringe Eindringtiefe am linken Arm stützen die bereits eröffnete Annahme, dass das Projektil, welches die untere Etage am Brustkorb mit sog. Zweihöhlenverletzung komplett durchschlagen hat (Aufzehrung von Energie), mit nunmehr matter Restenergie die Haut am linken Oberarm durchschlagen hat und alsbald unter der Muskelhaut als Steckschuss [Steckschuss] im linken Arm verblieb. Auch die Anordnung der Schusslücken passt ohne weiteres zu einer Flugbahn. Eine solche Annahme war wohl auch im Zuge der ersten Obduktion angesprochen worden.” Ergänzende rechtsmedizinische Stellungnahme A9

The various reports contained within our source materials indicated marginally different possible positions for these wounds, which we indicated with a pink colour. In a darker red colour, we indicated the likely entry and exit wound positions, based on the cumulative photographic and textual information available (ref. Fig. 7 below and the table 1 in 1.3.5.1.).



Fig. 7

1.3.5.3. Modelling the shot paths

The paths of the gunshots through Baker's body could also give us determining information about the relative position of Baker to the officers who fired the shots. The Forensic Radiology Reports (A3, A6), Autopsy Report (A4) and Pathological Examination (A7) describe and pictorially represents three shot paths. As above (1.3.5.1.) we believe that two of those paths are in fact caused by the same projectile.

A shot does not travel in a straight line through the body; it can be deflected impacts with hard objects such as bones. The entry location and initial interior direction and angle of the shot path can provide information relating to the starting position of the projectile outside of the body, and thereby the relative position of Baker to the firing officers at the time of each shot.

For each entry shot path, a line is drawn to connect two points from the entry location to the first moment of deflection inside the body. This line is extrapolated backwards, outside of Baker's body.

The shot paths are essentially attached to the 'rigged' body figure, such that they move with the body figure (Fig. 8). In this way, the shot paths can be variably aligned with the position of the firing officers to assess different possible locations for Baker at the moment of each shot. Again, this process proceeds iteratively, the shot path placed in dialogue with the other visual and spatial evidence.



Fig. 8

1.3.5.4. Caveats concerning modelling Baker's body position and location

Two caveats must be given in relation to the above passages. First, there are discrepancies among the various sources for the location of the entry wounds on Baker's body (as described in the table 1 in 1.3.5.1., and otherwise in 1.3.5.2.). Second, the accuracy of the extrapolated shot paths (1.3.5.3.) is a function of the accuracy and quality of the available imagery, and can only be as accurate, not more accurate, than the source data.

Together, these considerations require a certain caution when using the extrapolated shot paths for positioning Baker in relation to the firing officers. We mitigate for this margin of uncertainty by comparing any assessments derived from shot paths with other visual and spatial evidence.

1.3.6. Baker's body position

From the available data, we can draw certain conclusions about Baker's body position itself at the time of the shots.

First, both shots enter Baker on his right side. The extrapolated shot paths suggest that the firing officers were broadly 'above' and 'behind' Baker (relative to Baker's torso in an upright position), suggesting that Baker's right side was towards the firing officers at the time of the shots, but also that his torso was at least slightly curved to bring his shoulders forward, as if bending over, and his body rotated such that the front of Baker's torso was beginning to turn away from those officers.

Second, since shot paths SP2 and SP3 are almost certainly caused by the same projectile, we can use our 'rigged' model of Baker's body to align the exit wound of SP2 and the entry wound of SP3, to conclude that at the time of that shot, Baker's upper body was 'hunched over', with his left shoulder lowered in relation to his upper torso, his left arm pressed against the left side of his torso, as indicated in Fig. 9 below.

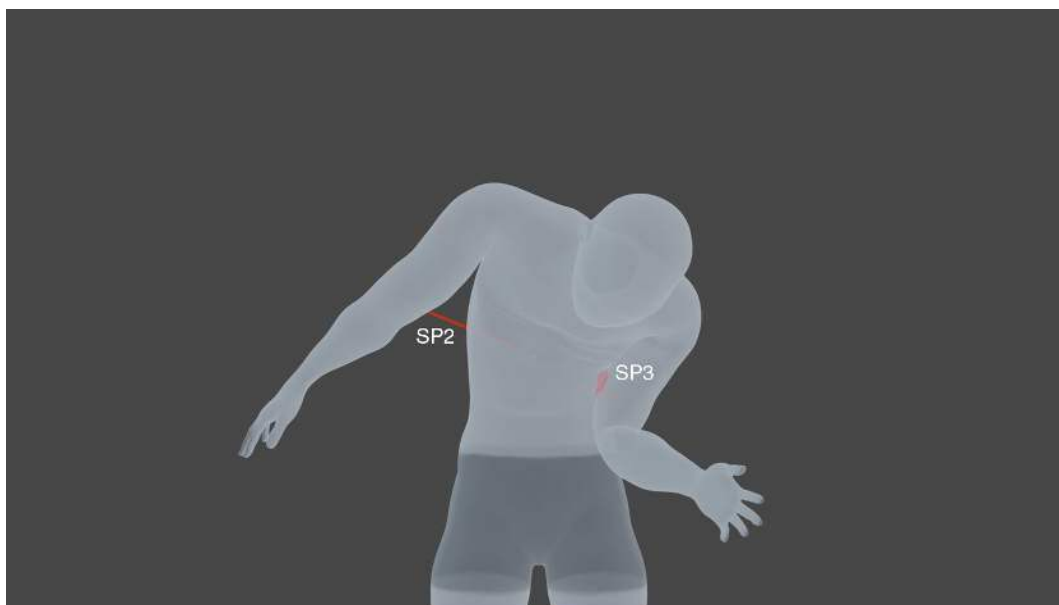


Fig. 9

1.4. Data from firearms analysis

Within our source materials (OMC and ROR), there is reference to a forensic examination of the discharged firearms and the projectiles recovered from the scene.¹⁰ The summary of this examination indicates that the projectile that ended in the upper left side of Baker's torso, is equally as likely to have been fired by the firearm of officer O1 or O2.

Therefore, it cannot be known which officer fired the shot which caused shot path SP1 (Fig. 10).

¹⁰ Referred to in section '9.3. Result of the investigation by the Dutch Forensic Institute' [9.3. *Resultaat van het onderzoek door het Nederlands Forensisch Instituut*] of the Rijksrecherche Official Report (ROR) as well as in the section 'Examination of the weapons' [*Onderzoek aan de wapens*] in the OM conclusion (OMC).

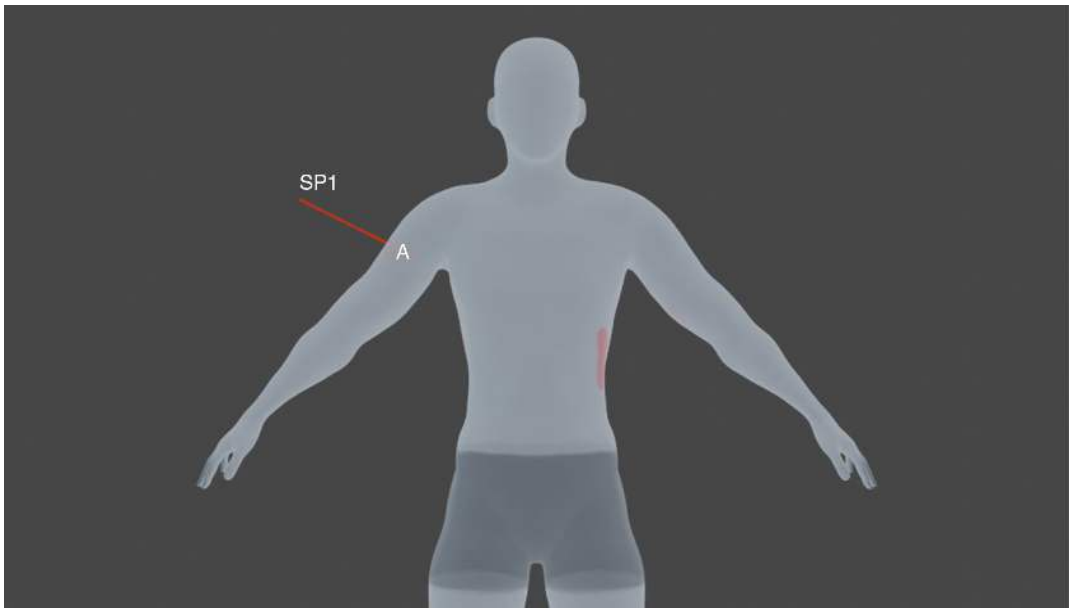


Fig. 10

The same summary indicates that it is “much more likely” that the projectile which caused shot paths SP2 and SP3 (Fig. 11) was fired by officer O1.

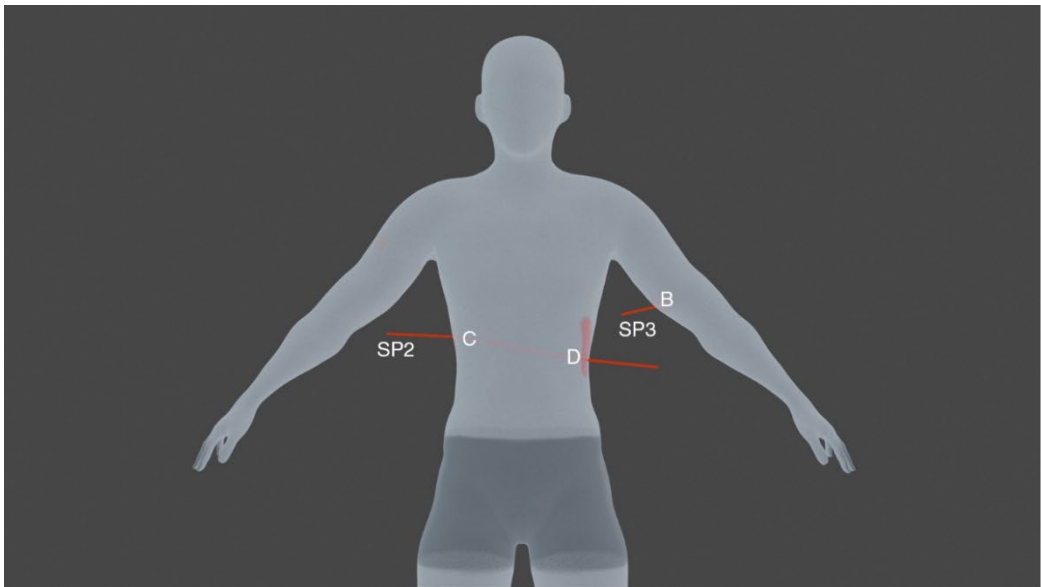


Fig. 11

1.5. Audio analysis of the shots

Three videos capture the moments of the shots (14, 13/15, 16). The camera recording video 16 was the closest to the location of the shots (approximately 14m away). The audio recorded as part of video 16 was used to analyse the audio signature of the gunshots.

Audio analysis established that four consistent peaks in acoustic intensity are visible, indicating that four shots were fired. Shots 2 and 3 were fired approximately 30 milliseconds (ms) apart.¹¹ This is substantially faster than the maximum possible rate of fire of a semi-automatic pistol such as the Walther P99Q model commonly used by officers of the Amsterdam Politie. As such, it is certain that shots 2 and 3 were each fired by a different officer, at essentially the same instant.

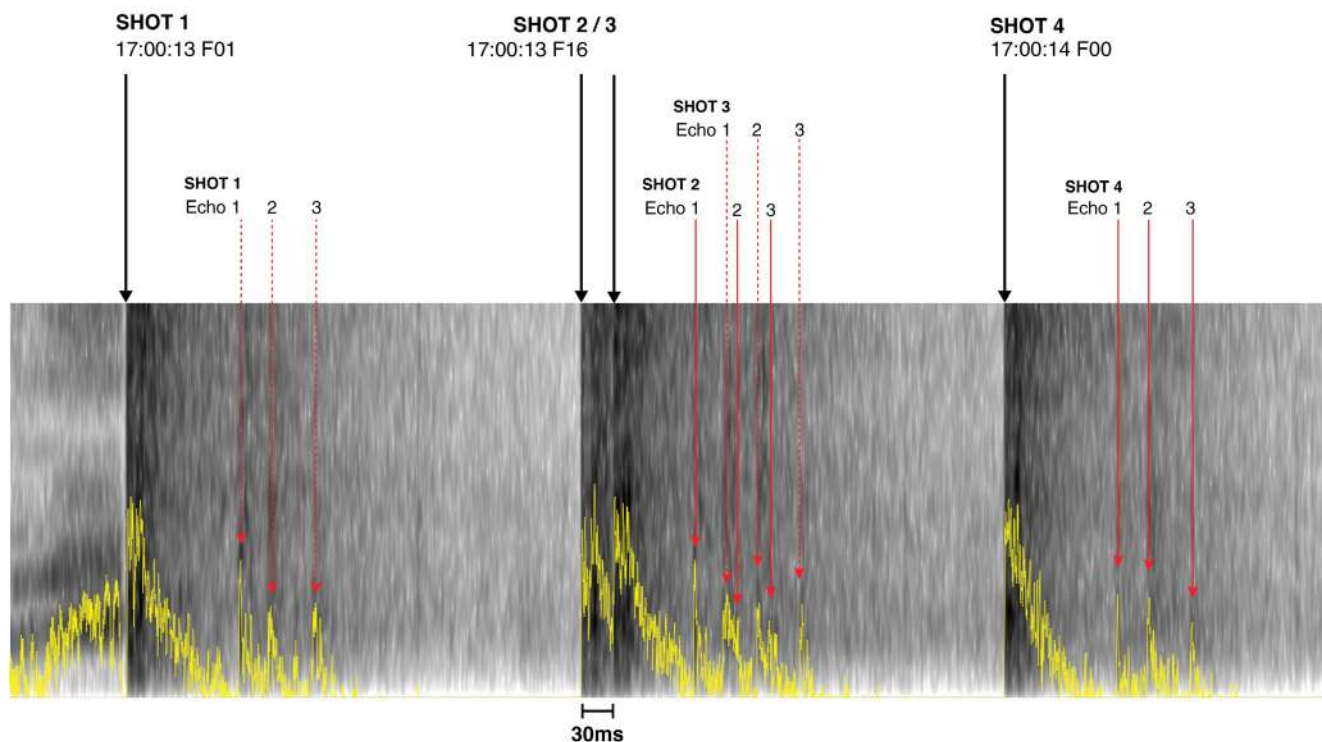


Fig. 12

Together, the video sync (section 1.2.1.) and the audio analysis indicate that the four shots were fired over a period of 0.98s. The first shot was fired at 17:00:13 F01, the second and third at 17:00:13 F16, and the fourth at 17:00:14 F00.

1.5.1. Determining which officer fired which shot

At the time of the first shot (17:00:13 F01) in video 16, we see officer O1. His arms are stretched forward suggesting that his firearm is drawn. In video 14, we see that officer O2's right arm is lowered near his holster not in a position to shoot (Fig. 13). Therefore, officer O1 fired shot 1.

¹¹ This analysis was conducted by the audio-investigative research agency Earshot (www.earshot.ngo).



17:00:13 F01



14

Fig. 13



16

At the time of the second and third shot (17:00:13:F16), both officers O1 and O2 are visible with their arms stretched forward, suggesting that their firearms are drawn. (Fig. 14)



17:00:13 F16



14

Fig. 14



16

It is already known (see 1.5) that each officer fired once at the moment of the second and third shot. Since we know that both officers fired twice, we can conclude that officer O2 fired the fourth shot. From the available evidence, however, it is not possible to determine which shot caused which injury to Baker.

From shot path analysis, sound analysis and video analysis, we know the following is true regarding the different shot paths and shooters:

	SHOT 1	SHOT 2/3	SHOT 4
Could have caused shot path:	SP1 SP2 Miss	SP1 SP2 Miss	SP1 Miss
Could have been fired by:	O1	Both	O2

Table 2

Video evidence compared to the testimony of police officers, and the statements of the OM

Examination of the available video material bears upon three claims made by police officers or by the OM, as described in our source materials.

1.1. Baker is not seen ‘waving a knife’ while he walks

First, we note that according to what appear to be testimonies given to investigators by the police officers involved in the incident, the officer-in-charge (OvD) O4 states (WE_O4_1) that they ‘heard over the radio that Seewald [Baker] was walking in the direction of the colleagues, already waving that knife’.¹²

To our understanding, the radio communication transcripts (RC) do not indicate any such statement.

We closely examined the video materials which captured Baker during the entire time period officer O4 may have been referring to, from 16:50:21 F00 to 17:00:05 F24.¹³

¹² Original in Dutch: ‘Vervolgens hoorde ik over de porto dat Seewald in de richting van de collega’s liep, al zwaalende met dat mes’. Translation provided by accredited translator Joy Phillips, Wbvtv no. 2157.

¹³ Officer O4 also stated (WE_O4_1) that prior to that they ‘had a brief contact with [the ‘dog handler’, officer O3] then ‘saw that [O3] walked around the bushes and that he had a dog with him’.

At 16:50:34 F15, Baker stood up, presumably from a seated or crouched position, and was visible for the first time on the available video material (Fig. 15). He remains in approximately the same position for around 7 min 20 sec.



Fig. 15

At 16:57:54 F00 Baker began to walk extremely slowly in the direction of the officers. He came to a stop again at 17:00:04 F04, at which point he had moved approximately 20-25 metres in 2 min 10 sec.

From officer O4's testimony, we can infer that they are referencing a moment that must have occurred after officer O3 had arrived at the scene and positioned themselves by the bushes behind Baker but before Baker was brought to the ground.

It is unclear exactly when officer O3 arrives on the scene, but both radio communication and video evidence allow us to determine a window of possibility: Officer O3 and his dog are visible (video 13/15) for the first time at 16:59:27 F04, getting in position behind Baker. At 17:00:05 F24 officer O3 physically tackled Baker and brought him to the ground (Video 14,13/15,16).

We also consider the radio communications which suggests that around 16:50:21 (according to the document timecodes) the dog handler has not yet arrived on the scene as they 'want to have a handler here on the spot' [*Ik wil hondengeleider hier ter plaatse*]. Radio communication then indicates the presence of 'a dog handler on site now' [*Ik heb hier nu een hondengeleider ter plaatse*] shortly before 16:58:30. Suggesting O3 must have arrived on the scene at some point between these two times.



Fig. 16

Our analysis of the video material suggests that during this time Baker’s left hand remains consistently near to the left side of his neck (as is visible in Fig. 16 above). The only possible exception is a one-second period during which Baker was not visible in the videos, from 16:59:23 F00 to 16:59:24 F00. However, there are no indications at the moments before or after that one-second period that Baker’s arm position changed substantially (i.e. into a ‘wave’) during that period.

As such, we conclude that contrary to the statement of the OvD (officer O4), Baker is at no point seen to be ‘waving his knife’ in the direction of the officers during this period.

Finding 2.2: Contrary to the contemporaneous observations from the scene as recounted by the officer-in-charge in their post-incident testimony, Baker did not ‘wave’ the pocketknife at officers, or make any threatening action whatsoever towards the officers during the time that he was visible upright and walking through the courtyard.

We note that, referring to the same period, in a letter addressed to Mr Korver and dated 07.02.2021, the public prosecutor’s office (OM) states that Baker ‘could not be stopped in any way’.¹⁴ While police strategy in cases of mental health crisis is not our expertise, we share the evident surprise of the expert Dr Feltes regarding this statement, considering how Baker is moving and behaving during this period, according to the available video evidence.

¹⁴ Quoted in English as already translated by Dr Feltes.

1.2. The dog handler did not fall to the ground with Baker

According to the same collection of testimonies within our source material (WE_O7, WE_O9 and WE_O10), three officers (who we refer to as officers O7, O9 and O10) claim that when Baker fell to the ground, the officer O3 (the 'dog handler') fell with him. This could conceivably have been a reason for officers to move in to assist their colleague.

'As the victim began to walk toward the officers, the negotiator could no longer be waited for and the decision was made to deploy the dog handler. The dog handler decided in a 'split second' to take the victim to the ground. They fell down together upon which officers decided to come to the help of the dog handler.'¹⁵ (OMC)

At 17:00:05 F00, the police dog has clearly moved past Baker without engaging or attacking him. At this time, Baker is motionless. As a result of the dog's movement, officer O3 is now stood right next to Baker, behind his left shoulder.

By 17:00:05 F24, officer O3 has evidently made a decision to physically tackle Baker (Fig. 17 and 18). According to his testimony (WE_O3), the officer does so because he has come to believe that Baker will attack him if he does not attack first.

There is nothing in the available video evidence which supports this assessment by the officer.

¹⁵ Original in Dutch: 'Doordat het slachtoffer op de agenten begon in te lopen, kon de onderhandelaar niet meer worden afgewacht en is ervoor gekozen om de hondengeleider in te zetten. De hondengeleider besloot in een 'split second' om het slachtoffer naar de grond te brengen. Ze kwamen samen ten val waarop agenten besloten de hondengeleider te hulp te schieten.'



14
Fig. 17



16



13/15

17:00:05 F24



14
Fig. 18



16



13/15

17:00:06 F14



Thereafter, Baker is brought down, falling with his back to the ground, his arms remaining near his upper body and his body facing towards the dog handler, who is now standing over him.

At 17:00:07 F23 Baker's legs are partly visible in Video 13/15 (Fig. 19). Officer O3 is clearly visible standing above him. We reconstructed this moment in 3D, beginning with the 'photo match' methodology outlined in section 1.3.2. (Fig. 20).



Fig. 19



Fig. 20

We placed the model figure of Baker in the 3D environment, and varied the position of the figure until it matched the legs as visible in video 13/15. Baker's upper body is not visible at this moment, and as such the position of his upper body and arms at this moment as represented in Fig. 21 below are inferred from video 16 at 17:00:07 F02 to F15, when Baker's upper body is visible as he falls.

(While we have no reason to doubt the officers' testimony that Baker is holding the pocket knife to his neck at the moment that he is attacked by officer O3, it is important to note that, based on the video evidence alone, it no longer possible to know whether Baker is still holding the pocket knife from this point onward.)



Fig. 21

3D reconstruction confirms the results of video analysis: that the claim, made by officers O7, O9 and O10, that officer O3 fell to the ground with Baker is **not true**. The dog handler remains standing throughout the incident, and after the moment reconstructed above in Fig. 21 cannot be said to be in any danger from Baker.

Finding 2.1: Contrary to the testimony of three officers, the officer in charge of the police dog (the 'dog handler') did not fall to the ground with Baker.

1.3. Baker does not ‘call for a doctor’ during the period captured on video

In its conclusion document (OMC), under the section ‘description of available footage’, the OM states that in video evidence ‘the victim [Baker] can be heard asking/calling for a doctor’,¹⁶ specifically referring to the moments after Baker is brought to the ground by officer O2.

We analysed the relevant parts of the video sequence for possible moments at which Baker could have been heard asking for a doctor (namely video 3,4,13,16). We had the audio tracks isolated, cleaned, and enhanced¹⁷ before being provided to accredited DE-NL translators, with the only instruction to document what they heard in the footage. Neither translator made a note of hearing Baker’s request for a doctor.

Testimonies from Baker’s friend (WE_MR) also mention hearing Baker call for a doctor at some point before he is brought to the ground by officer O2. It is important to note that the absence of an audible request for a doctor in the captured audio does not definitively rule out the possibility that it occurred at another point in time, not captured on video. However, based on the audio analysis, it is highly unlikely that Baker called for a doctor, as the OM conclusion document states, while he is on the ground.

Baker’s body position during the period of the shots

1.1. Where Baker’s body is visible during the period of the shots

Baker was shot to death because, according to the concluding report of the OM (OMC), there was an ‘imminent danger’ to the officers.¹⁸ Here we offer video analysis and digital reconstruction which may contribute to an examination of that conclusion.

Videos 14, 13/15, and 16 captured the period of the shots. Again, during this period, the cameras’ view of Baker is obscured by thick bushes. We identified parts of Baker’s body at different moments just before, during and after the shots, and used these to digitally reconstruct his possible or likely body position at those moments, as well as the location and position of nearby officers.

At 17:00:09 F09, Officers O2 and O5 are visible reaching down towards Baker (Fig. 22), broadly indicating his position. Both officers describe an attempt to grab Baker’s arms (WE_O2 and WE_O5). According to their testimony, they were both initially successful in doing so, but subsequently lost control

¹⁶ Original in NL: ‘waarop te horen is dat het slachtoffer om een arts vraagt/roept.’

¹⁷ This enhancement was conducted by the leading audio-investigative research agency Earshot (www.earshot.ngo).

¹⁸ ‘Er was sprake van een onmiddellijk dreigend gevaar voor een wederrechtelijke aanranding’ (OMC)

of Baker's arms.¹⁹ It is not clear, from both the video analysis and testimonies together, which of Baker's arms each officer attempted to grab, and when. However, it is clear and sufficient for our analysis that Baker was lying the ground with his arms in the air.



13/15

Fig. 22

Less than a second later, at 17:00:09 F27, a part of Baker's body is visible in video 16 (Fig. 23). This is (one of) the last time(s) we see Baker before he is shot.

¹⁹ For example, O5: "I dived to my knees and grabbed his left wrist, I think with both hands. This was because I saw that the boy was holding that knife in his left hand. After that, I saw that the boy moved his right arm towards his left hand and transferred the knife to his right hand. I saw that he started swinging that knife around wildly immediately after that. I saw and felt that he hit my safety vest with that knife during that. He did not stab me; it was like he sliced at the front of my vest from the top down. Startled, I let his left wrist go."

And O2: "I managed to grab the hand with the knife. But my feeling was that I had my arms outstretched and my head held back, so he couldn't stab me. He was making such wild stabbing attempts that I lost control of his hand"



17:00:09 F27

16

Fig. 23

Just over two seconds later, at **17:00:11 F19**, Officer O2 begins to move backward, away from Baker (Fig. 24). Based on our assessment of the subsequent movements of Officers O7 and O5 in the following second, this could be the moment when Officer O2 loses control of Baker's hand. Indeed 7 frames later, at 17:00:12 F01, officer O7 also begins to pull away from Baker, and at 17:00:12 F15 both O5 and O7 are seen clearly moving back in haste (Fig. 25).



17:00:11 F19

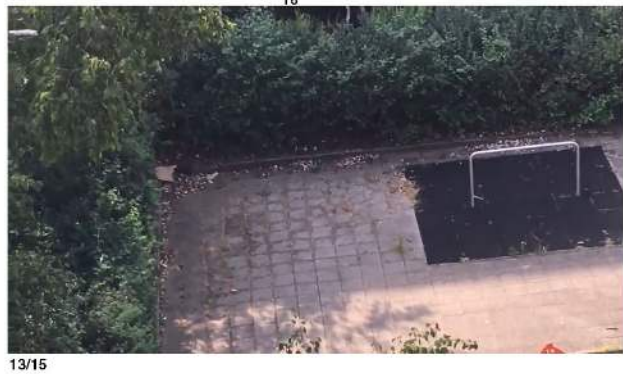


Fig. 24



17:00:12 F22



Fig. 25

Over one second later, at 17:00:12 F26 in video 16, a part of Baker is again visible (Fig. 26). It is unclear exactly which part of Baker is visible, however in the next few frames through the bushes we see this part of Baker moving.



17:00:12 F26

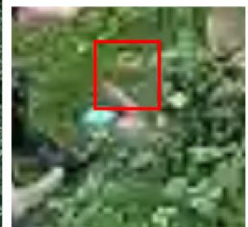


16
Fig. 26

5 frames later, at 17:00:13 F01, a part of Baker's body is still visible through the bushes (Fig. 27). This is the moment of shot 1.



17:00:13 F01



16
Fig 27

In video 13/15 we also see Baker's body behind the bushes (Fig. 28), with the officers surrounding him.



17:00:13 F01



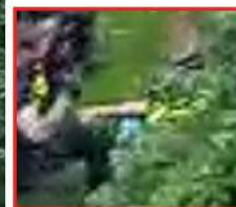
13/15

Fig 28

Half a second later at 17:00:13 F16 are shots 2 and 3. At this moment in video 16 we see part of Baker's body (Fig. 29).



17:00:13 F16



16

Fig 29

Finally, at 17:00:24 F07, 10 seconds after the fourth shot, Baker's legs are visible in video 16 (Fig. 30).



17:00:24 F07



16

Fig. 30

Parts of Baker's body are visible immediately before, during, and after the shooting. To better understand Baker's body position during this time, we reconstructed these moments in 3D.

1.2. What is not visible in the available video material

During shots 1, 2 and 3, video footage captures the scene of the shooting, including officers' positions and part of Baker's body. At the moment of shot 4 at 17:00:24 F07 (Fig. 31) Video 16 captures the officers' positions. Video 14 and 13/15 however did not capture anything of the incident. Baker's body cannot be seen at the moment of shot 4, and therefore we are not able to assess Baker's body position any further at that moment.



Fig. 31

1.3. Baker's body position during the period of the shots

Whilst it is not possible to be certain of the position of all of Baker's body during the period of the shots, we tested a range of possibilities, working between the available video footage, testimonies, and the available reports.

We also considered the likely amount of movement possible by Baker between key moments, which created a further constraint for positioning Baker's body. This process determined likely scenarios for Baker's body position at the time of the shots, as well as produce key counter factual scenarios to rule out unlikely scenarios.

In the below section 1.3.1. we demonstrate in practice what that iterative process entails.

1.3.1. At the time of shot 1

Shot 1 was fired by Officer O1 (see 1.5.1), as captured across the three videos of the shooting incident (14,13/15,16). It is not known if this shot misses Baker, or hits Baker as shot path 1 (SP1) or shot path 2 (SP2). However, as both shot paths enter Baker on his right side and the time between the shots is not enough for Baker to move significantly, it is likely that during the period of the first and second shots (16 frames, or 0.533... seconds), Baker has his right side towards officer O1, with his left arm tucked under at this moment.

At the moment of shot 1, 17:00:13 F01, Baker's body is captured in videos 13/15 and 16. In video 13/15, through the bushes and on the ground, we see Baker's knees that are brought upwards towards his chest, and his right arm which is in the air (Fig. 32). In video 16, through the bushes, we see Baker's left foot and right knee (Fig. 33).



17:00:13 F01



13/15

Fig. 32



17:00:13 F01

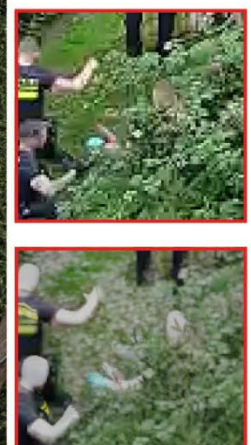


Fig. 33

1.3.1.1. How do we know this is his right knee and left foot?

We tested a range of alternative positions for Baker at the time of shot 1, using the photomatch of camera 13/15. If the parts of Baker seen in this frame were his left arm and left leg (Fig. 34, top), then he would have had his back to O1 and O2 at the time he was shot. This is inconsistent with shot paths SP1 and SP2. If the part of Baker seen in this frame were his right arm and the outside of his right leg (Fig. 34, bottom), similarly his back would have to face O1 and O2 at the time he was shot, which is inconsistent with shot paths SP1 and SP2. If the part of Baker seen in this frame were his head and right arm, he would be lying on his back with his feet towards O1 and O2 (Fig. 35, top). Again, this is inconsistent with the shot paths SP1 and SP2. Finally, the part of Baker's body captured in the frame could not be his left leg, because it cannot be made to match the photomatch in Fig. 35, bottom.

Through this iterative testing process, we are confident with Baker's position at the time of shot 1. (Fig.33) This process was used throughout our investigation, to understand the position of Sammy at key moments.



Fig. 34



17:00:13 F01

13/15



13/15

Fig 35

Between these two video frames, officer O1's position and our modelling of shot paths and bullet wounds, we estimate the position of Baker's body at the time of the first shot as below, in Fig. 36



17:00:13 F01

Fig. 36

Our modelling suggests it is likely that at the time of shot 1, Baker has his back towards the ground and is not in a position that is an immediate threat towards the officers. To verify this finding, we tested the following counter-factual scenario (1.3.1.1.).

1.3.1.1. At the time of shot 1, Baker could not have been in a seated upright position

If Baker were seated in an upright position, his upper body and head would be visible in video 13/15 at the time of shot 1 (as represented in Fig. 37 below). Whilst we see his legs and right arm in this video frame, we do not see any of his upper body, indicating that he is lying with his body on the floor.



13/15

Fig. 37

1.3.1.2. At the time of shot 1 Baker was not able to strike an officer's vest

Our estimation of Baker's body position at the time of shot 1 in Fig. 38, show that whilst his right arm is likely in the air, it is not in close proximity to any of the officers, including officer O5 who testified that Baker struck his vest with a knife (WE_O5).



17:00:13 F01

Fig. 38

As Baker is lying on his back at this time, his movement towards the officers, who were all on their feet, is limited. As such, at the time of shot 1, Baker does not pose an imminent danger to the officers.

1.3.2. At the time of shot 2/3

Shot 2 and 3 happen almost simultaneously and so we know both officer O1 and O2 fire their weapons (refer to sections 1.4 and 1.5) For officer O1, we do not know if this shot misses Baker, or hits Baker as shot path 1 (SP1) or shot path 2 (SP2). For officer O2, we do not know if this shot misses Baker or hits him as shot path 1 (SP1). When positioning Baker's body at the time of shot 2/3, all these potential shot paths are considered.

At the time of shot 2/3, 17:00:13 F16, we see the positions of the shooters clearly in video 14 and 16 and can position them in the 3D model. This, in combination with the shot path and bullet wound modelling enables our positioning of Baker, with his right side towards the shooters and left arm tucked under his left side body.

At the moment of shot 2/3 in video 16 we see a limb of Baker's coming out of the bushes (Fig. 39). Analysis with the 3D model suggests this is Baker's right leg (Fig.40).



17:00:13 F16



16

Fig. 39



17:00:13 F16

Fig. 40

We cannot be certain of the exact positioning of the rest of Baker's body at the time of shot 2/3, as it is not captured in any video. However, it is likely his body will not have moved significantly since shot 1 and that his upper body remains on the ground.

Our modelling suggests it is likely that at the time of shot 2/3, Baker has right leg kicking outwards, his back towards the ground, and is not in a position where we could strike an officer with a knife. To verify this finding, we tested the following counter-factual scenarios:

1.3.2.1. If this were Baker's right arm

Testing in the 3D model suggests that if the limb seen in video 16 at the time of shot 2/3 were Baker's right arm (as in Fig. 41 and Fig. 42), Baker would likely have been in a position similar to that in Fig. 43 at the time of shot 1. In our assessment this an unlikely photomatch, and more likely possibilities exist. In this scenario, the parts of Baker's body that are captured in video 13/15 (Fig. 44), at the time of shot 1, would be his right leg and arm.

Whilst this scenario might seem possible based on the photomatches only, shot path analysis indicates that if Baker's right arm were in this high position at the time of shot 2/3 (as per Fig. 42), the shot path SP1 would have likely been caused by shot 1. If this were the case, Baker would have had to make a fast, decisive swing of his right arm directly after shot 1, which is also very unlikely.

(Whilst there is a possibility SP1 was caused by shot 4, our modelling suggests this is very unlikely.)



16
Fig. 41



17:00:13 F16

Fig. 42



17:00:13 F01

Fig. 43



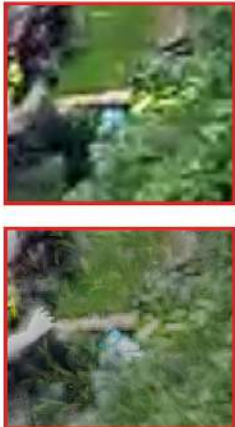
Fig. 44

1.3.2.2. If this were his left arm

Testing in the 3D model suggests that if the limb seen in video 16 at the time of shot 2/3 were Baker's left arm (as in Fig. 45 and 46), Baker would likely have been in a position similar to that in Fig. 43 at the time of shot 1. In our assessment this is also an unlikely photomatch, and more likely possibilities exist. In this scenario, the parts of Baker's body that are captured in video 13/15 (Fig. 44), at the time of shot 1, would be his right leg and arm.

Whilst this scenario might seem possible based on the photomatches only, shot path analysis indicates that if Baker's left arm were in this high position at the time of shot 2/3, the shot path SP2 would have been caused by shot 1. If this were the case, Baker would have made a fast, decisive swing of his left arm directly after having been shot through his left arm, which is very unlikely.

(SP2 could not be at the time of shot 4, as described in section 1.5.1.)



16
Fig. 45



Fig. 46

1.3.3. The position of Baker's legs after the fourth shot

10 seconds after shot 4, at 17:00:24 F07, we see his legs extending from the bushes in video 16. Baker's legs are extended north-easterly towards officer O7, with his right leg on top of his left leg, which suggests he is on his left side. (Fig. 47 and 48)



17:00:24 F07



16
Fig. 47



17:00:24 F07

Fig. 48

This supports the overall positioning of Baker, being on his left side with his feet facing officers O3, O6 and O7, at the time of him being shot.

His position also suggests the overall movement of Baker during the moments immediately before and during him being shot, that his body is both rotating to the left and moving towards his left, as in Fig. 49.



Fig. 49

1.4. Was Baker an ‘imminent danger’ to the officers immediately before he was shot?

1.4.1. Did Baker swing his knife immediately before he was shot?

Immediately before shot 1, analysis of video 16 shows a sweeping motion of part of Baker’s body, beginning 5 frames earlier at 17:00:12 F26 (Fig. 50) and ending at the moment of the shot (17:00:13 F01). From video analysis alone, it seems that this may be Baker’s arm, supporting witness testimonies (WE_O1/O2/O6/O10) that Baker waved his knife towards officer O5 prior to him being shot. However, positioning Baker and the officers during this period indicates that this sweeping motion is likely Baker’s right leg (Fig. 51).



17:00:12 F26



16
Fig. 50



17:00:12 F26

17:00:12 F26
17:00:13 F01



17:00:13 F01

Fig. 51

fig. 33

To verify this finding, we tested the following counter-factual scenarios:

1.4.1.1. If it were his right or left arm?

It is unlikely that the sweeping motion seen in video 16 is an arm. As our modelling suggests that Baker has his left arm tucked under his left side at the time of the shots (see section 1.3.6), the motion captured in video 16 cannot be his left arm.

We tested the position of Baker if the sweeping motion in video 16 were his right arm at the time of shot 1 (17:00:13 F01), seen in Fig. 52. At this time, we also see Baker's body in camera 13/15 (Fig. 53) and know his position relative to the shooters. Positioning his body within these parameters, we clearly see that if the swinging motion were his arm, we would also see his legs in video 16 (Fig. 54), rendering that scenario unlikely.



17:00:13 F01

Fig. 52



17:00:13 F01



13/15

Fig. 53



17:00:13 F01



16

Fig. 54

This is further supported by the likely motion of Baker after shot 1, with his right leg kicking towards officer (refer to 1.3.2). This analysis suggests that at the moment of the first shot and right before (1/6 second), Baker did not pose an acute or immediate danger to the officers. He likely was on his back and swung his right leg towards officer O5. All officers at this moment could have stepped away from Baker and would have been out of range of his arm.

1.4.2. Did Baker swing his knife prior to the leg swing?

Prior to seeing Baker’s leg in video 16 at 17:00:12 F:26 (Fig. 50), there is a 3 second period where Baker’s body is not seen in any of the videos. To understand whether Baker could have been an imminent danger to the officers during this time, we have used the 3D model to better understand his likely position.

We positioned Baker’s body either side of this 3 second period, using key moments of the video footage that captures his body, as seen in the table below (Fig. 55). We also inferred his position within this period (17:00:11 F19), through the position of the officers in the videos and their testimonies of Baker’s position.

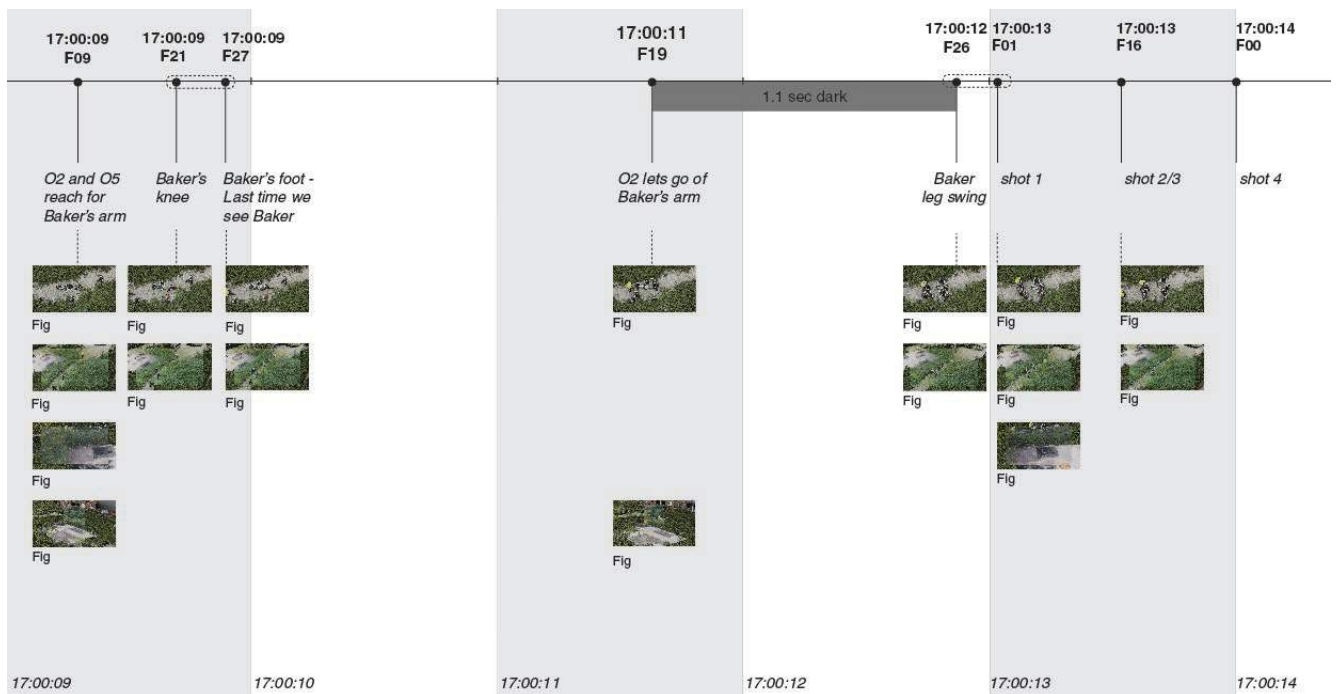


Fig. 55

1.4.2.1.1. Last time we see Baker before the 'dark period'

The last time we see Baker’s body prior to this period is at 17:00:09 F27; here we see what is likely Baker’s foot in Camera 16 through the bushes (Fig. 56). Analysis of this video from 17:00:09 F21 (Fig. 57) to 17:00:09 F27 shows what is likely a sweeping motion of Sammy’s right leg and foot (see section 1.4.1). Baker’s upper body is not visible in any of the available videos, but considering the likely position of his right leg and foot (as photo matched in camera 16 during that time), it is very likely that Baker is still on his back (Fig. 58 and 59).



17:00:09 F27



16

Fig. 56



17:00:09 F21



16

Fig. 57



17:00:09 F27

Fig. 58



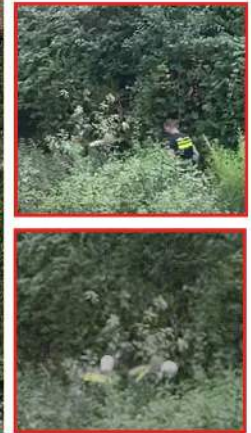
17:00:09 F21

Fig. 59

At 17:00:09 F09, 11 frames (1/3 second) prior to the leg swing, we see officers O2 in video 14 and video 13/15 (Fig. 60 and 61) and O5 in video 13/15 (Fig. 61). Video analysis suggests O2 and O5 are attempting to hold onto Baker's arms, as described in the testimonies WE_O2 and WE_05. In the likely scenario that Baker has his arms in the air, this would suggest that Baker is on his back, in a position similar to that in Fig. 62.



17:00:09 F09



14
Fig. 60



17:00:09 F09



13/15
Fig. 61



17:00:09 F09

Fig. 62

1.4.2.1.2. Inferring parts of Baker's body position from the officers' positions

Whilst we do not see Baker's body again until 17:00:12 F26 (Fig. 50), immediately before shot 1, we see in video 13/15 and video 14 officer O2 possibly engaged in an effort to restrain Baker's arms until 17:00:11:F19 (Fig. 63). We can infer that during this 1s period, Baker likely remains on his back with his arms in the air.



17:00:11 F19

14
Fig. 63



17:00:11 F19

Fig. 64

This moment, when the officer O2 appears to release Baker’s arms, is the final time we can infer Baker’s position through the video footage until 17:00:12 F26 (Fig. 50), 1.1 seconds later. It is not possible to determine Baker’s actions during that 1.1s.

Our analysis indicates that Baker is positioned on his back with his legs in the air before (17:00:11 F19) and after (17:00:12 F26) this 1.1 second; therefore, it is likely he remains in a similar position through the 1.1 second period.

During this 1.1 second, video 13/15, 14 and 16 show officers jumping backwards (Fig. 26) We have identified this as a potential time that Baker waved his knife, as described in witness testimonies WE_O1/O2/O6/O10.

If Baker were to have swung the pocket knife during this time, our spatial analysis suggests that Baker would have done so whilst lying on his back. As such, the officers could have easily and safely removed themselves from any possible immediate danger by stepping backwards.

For more information, please contact:
info@forensic-architecture.org forensis@counter-investigations.org

Researcher-in-charge
Robert Trafford

Project coordinator
Lola Conte

Research and production
Phoebe Walton
Natalia Sliwinska
Peter Polack