

Technical Note prepared by the Special Rapporteur on extrajudicial, summary or arbitrary executions, Mr. Philip Alston, in relation to the authenticity of the “Channel 4 videotape”

Overview

1. On 25 August 2009, a United Kingdom television station released video footage which appears to show the summary execution of Tamils by Sri Lankan soldiers. A group named Journalists for Democracy in Sri Lanka claimed that the killings had been filmed in January 2009 by a Sri Lankan soldier with a mobile phone. This was at a time when the international media did not have access to the conflict zone.
2. Since the video’s release, the Government of Sri Lanka has claimed that the video is a fake. Over the past four months, I have been engaged in a series of communications with the Government about this video, in which I requested it to conduct an independent investigation. While the Government initially refused to do so, on 7 September 2009, it issued a response stating that it had commissioned four separate investigations, and that they “have now scientifically established beyond any doubt that this video is a fake”. At the time, I expressed concern about the objectivity of the investigations, in part because two of the “independent experts” worked for the Sri Lankan armed forces. Some of the reports seemed more impressionistic than scientific, and I have never been provided the full version of the reports.
3. I decided that it was incumbent upon me to commission independent and impartial evaluations of the videotape. I retained three experts: in forensic pathology (Dr Spitz), forensic video analysis (Mr Spivack), and firearm evidence (Mr Diaczuk). Together, the reports by these experts strongly suggest that the video is authentic.
4. Mr Diaczuk concluded that the recoil, movement of the weapon and the shooter, and the gases expelled from the muzzle in both apparent shootings were consistent with firing live ammunition, and not with shooting blank cartridges.
5. Dr Spitz found that the footage appeared authentic, especially with respect to the two individuals who are shown being shot in the head at close range. He found that the body reaction, movement, and blood evidence was entirely consistent with what would be expected in such shootings.
6. Mr Spivack’s forensic video analysis found no evidence of breaks in continuity in the video, no additional video layers, and no evidence of image manipulation.
7. There are a small number of characteristics of the video which the experts were not able to explain. This included the movement of certain victims in the video, 17 frames at the end of the video, and the date of 17 July 2009 encoded in the video. Each of these characteristics can, however, be explained in a manner which is entirely consistent with the conclusion that the videotape appears to be authentic.

8. Moreover, the independent experts' analyses also systematically rebutted most of the arguments relied upon by Sri Lanka's experts in support of their contention that the video was faked. For example:

(a) A Sri Lankan expert stated that there was no recoil or movement of the weapon discharged. However, Mr Spivack and Mr Diaczuk described the recoil visible on the video, and the way in which the movement was consistent with firing live ammunition.

(b) A Sri Lankan expert stated that the lack of audio synchronization with the video indicated manipulation. However, Mr Spivack stated that the video/audio synchronization in the video was well within acceptable limits, and that audio can be ahead or behind video, subject to various variables.

(c) A Sri Lankan expert stated that the movement of the second victim after being shot was not consistent with the normal expected reaction. However, Mr Spitz stated that the movement was entirely consistent with the manner in which the individual was apparently shot.

(d) A Sri Lankan expert stated that while wind could be heard on the audio, it was not evident in the video. Mr Spivack however described multiple places in the video where there is clear evidence of wind.

(e) Sri Lanka's experts argued that the footage was likely recorded on a digital camcorder, and not a mobile phone. Mr Spivack concluded that the metadata he retrieved from the video was entirely consistent with multimedia files produced by mobile phones with video recording capability, and that it would have been very difficult to alter the metadata.

9. In sum, while there are some unexplained elements in the video, there are strong indications of its authenticity. In addition, most of the arguments relied upon by the Government of Sri Lanka to impugn the video have been shown to be flawed.

10. In light of these conclusions, and of the persistent flow of other allegations concerning alleged extrajudicial executions committed by both sides during the closing phases of the war against the LTTE, I call for an independent inquiry to be established to carry out an impartial investigation into war crimes and other grave violations of international humanitarian and human rights law allegedly committed in Sri Lanka.

* * *

11. The detailed report below provides a summary of the background to this issue, as well as a detailed summary of: (i) evaluations undertaken in September 2009 at the request of the Sri Lankan Government; (ii) evaluations undertaken by two other sources unrelated to either the Government or the Special Rapporteur; and (iii) evaluations prepared by the three independent experts commissioned by the Special Rapporteur. In addition, the full text of the latter three reports are reproduced as a separate Appendix to this Technical Note.

1. Introduction

12. On 25 August 2009, a United Kingdom television station, Channel 4, released video footage which appears to show the summary execution of Tamils by Sri Lankan soldiers. There is no indication in the video itself of the ethnicity of the dead men, but the group which obtained the pictures, Journalists for Democracy in Sri Lanka, claimed the victims are Tamils. The group claimed that the killings had been filmed in January by a Sri Lankan soldier with a mobile phone. This was at a time when the international media did not have access to the conflict zone.

13. The footage first shows a young man who is naked, bound and blindfolded. A man approaches him wearing what appears to be a Sri Lankan army uniform and appears to shoot him at point-blank range.¹ The video, taken in daylight, then pans out to show what appears to be eight bound corpses, all who appear to have been shot and killed. All but one are naked. Towards the end of the footage, a ninth bound victim is shown apparently being shot.

14. The day after the broadcast the Government of Sri Lanka issued a statement saying that it “strongly and unequivocally denies the allegations contained in the video footage telecast on Channel 4. This footage is diabolical and there is absolutely no truth in its concocted story . . .”² On 28 August 2009, in a letter sent to the Government of Sri Lanka and in a press statement, I called for the urgent establishment of an independent investigation into the authenticity of the video, adding that, if authentic, the images would indicate a serious violation of international law. I observed that no Government today can simply dismiss such allegations without undertaking a thorough investigation that meets international standards, and expressed hope that an invitation to conduct an official visit, which I had previously requested on a number of occasions, might be forthcoming in the light of these most recent allegations. In addition, I noted that my call did not prejudice any question as to the authenticity or otherwise of the video.³

15. The matter of the videotape was also raised by the United Nations Secretary-General, Ban Ki-moon, in talks in Geneva on 2 September 2009, with Mahinda Samarasinghe, Sri Lanka's Minister for Disaster Management and Human Rights.

16. The Government of Sri Lanka responded to the Special Rapporteur by means of a letter signed by Professor Rajiva Wijesinha, Secretary of the Ministry of Disaster

¹ <http://www.independent.co.uk/news/world/asia/video-that-reveals-truth-of-sri-lankan-war-crimes-1777746.html>

² http://www.slmfa.gov.lk/index.php?option=com_content&task=view&id=2100&Itemid=75³ See United Nations Press Release “An Independent Investigation into Sri Lankan Executions is Urgent, says UN Expert”, 31 August 2009, at <http://www.unhchr.ch/hurricane/hurricane.nsf/view01/56BD66A1DDB017AEC1257623002A48A7?opendocument>

³ See United Nations Press Release “An Independent Investigation into Sri Lankan Executions is Urgent, says UN Expert”, 31 August 2009, at <http://www.unhchr.ch/hurricane/hurricane.nsf/view01/56BD66A1DDB017AEC1257623002A48A7?opendocument>

Management and Human Rights. The letter rejected the video as inauthentic and indicated that the allegations made did not warrant Government attention until and unless definitive evidence was able to be provided. In subsequent commentary, it was suggested that the fact that the video had first been aired on Channel 4, which had previously had disagreements with the Sri Lankan Government, made an investigation even less appropriate. “[I]t is really too much to expect that an investigation be set in motion on the strength of a video clip shown on a television channel that had previously engaged in bizarre inaccuracies”. Professor Wijesinha also indicated that my earlier statement about the videotape had set me “at the heart of a terrorist media campaign against the Sri Lankan Government”.⁴

17. In my response to the Government I indicated that, in my view, international law established a clear standard which should be followed in such cases:

“[t]here shall be thorough, prompt and impartial investigation of all suspected cases of extra-legal, arbitrary and summary executions, including cases where complaints by relatives or other reliable reports suggest unnatural death in the above circumstances.”⁵

I acknowledged that there would always be legitimate room for debate as to what constitutes a ‘reliable’ report in any such situation, and that a videotape, like most other sources of alleged evidence, can be fabricated. I concluded, however, that in this instance it did “not seem to me that the video [was] patently fake or staged” and that it constituted “a sufficiently reliable source as to warrant investigation”. I added that:

“If it can be convincingly shown to be a fake, as your Government apparently believes, I will be immensely relieved and the allegations submitted to me by various sources will be shown to have been unreliable. I do not accept, however, that a video of this nature can be dismissed as self-evidently unreliable in the absence of any detailed investigation or analysis undertaken either by the Government or by independent experts.

Given the extremely serious nature of the killings depicted in the video, and your Government’s stated commitment to respecting human rights and promoting reconciliation within the country, it is my hope that serious consideration will be given to establishing an independent investigation into the alleged incident.”

⁴ Prof. Rajiva Wijesinha, ‘Arbitrary Execution by Prof Philip Alston’, Daily News, Sept 2, 2009, available at <http://www.dailynews.lk/2009/09/02/fea03.asp>)

⁵ Principles on the Effective Prevention and Investigation of Extra-legal, Arbitrary and Summary Executions, adopted by Economic and Social Council resolution 1989/65, of 24 May 1989, Annex, para. 9.

2. Evaluations commissioned by the Government

18. The Government of Sri Lanka subsequently decided to commission several expert opinions in relation to the videotape. On 7 September 2009 it publicly issued a “Consolidated Response of the Government of Sri Lanka to the Telecast by Channel 4 News of the United Kingdom on 25 August 2009 of a Video of Supposed Extra-Judicial Executions in Sri Lanka”. This document strenuously denied the video’s authenticity and set out the findings of four separate investigations that had been commissioned.

19. Sri Lanka also disputed the reliability of the source of the video – Journalists for Democracy in Sri Lanka – noting that they did not have any web presence until early August 2009, implying that they had been set up as a Tamil front group. Minister Samarasinghe also stated that attempts at publishing fabricated video evidence of atrocities had been common during the final phases of the war, citing in particular a video and telephone call which purported to document the bombing of a makeshift hospital by Sri Lankan armed forces (aired on Al Jazeera) which, according to the Sri Lankan army analysis which followed, was fabricated.

20. The Consolidated Response summarizes “observations” made by three experts in presentations made at a meeting convened by the Government for this purpose. The analysis of a fourth expert was read by Minister Samarasinghe and is also summarised in the Response. The full text of the analyses undertaken and reports presented by each of the four experts has not been made public. On 9 November 2009 I wrote to the Government noting that while I had “read carefully the excerpts from the various reports posted on the relevant official websites, ... I would very much appreciate being able to read the complete report submitted by each of the experts.” No substantive response to this request has yet been received.

21. *Expert statement one:* The report first documents the presentation of Dr. De Silva, Senior Lecturer in Computer Science and Engineering and director of the Centre for Instructional Technology at the University of Moratuwa (Sri Lanka). According to the report, he made the following observations:

- (a) “The granularity of motion vectors and other inter-frame features indicate that the footage had been originally captured using a high-end camera (at least a digital camcorder) and not by an average mobile phone.
- (b) An analysis of the colour levels and saturation shows that the bloodstains in the film are unusually strong in colour and have texture mismatches – this is usually the result of post-recording modifications and the use of digital effects.
- (c) There is no recoil or movement of the weapon discharged.
- (d) Texture analysis of image and possible over-lays shows evidence of tampering / digital effects in relation to enhanced bloodstains and one blindfold.
- (e) Evidence of audio dubbing
- (f) Lack of audio synchronization – audio is delayed for more than 1.5 seconds – this is not due to video compression or processing.

- (g) Audio indicates presence of strong wind-noise. However, this is not evident in the video footage.
- (h) Transcript of the Sinhala dialogue has no relation to the images in the footage. There is no audio of victims screaming or any other related noise.
- (i) There was no indication that a zoomed view was used.”⁶

22. *Expert statement two:* Minister Samarasinghe read the views of Mr. Siri Hewawitharana who, according to the Sri Lankan Government, was an expert on video technology. This assessment also focused on a technical analysis of the authenticity of the video. His findings were summarized as follows:

“There are indications that the original video is edited since original layer stopped at 1:02.781, video editing stopped at 01:02.312 and audio dub stopped at 1:02.152. If it is the original audio, it should have played all the way to 1:02.781 and should not have 2 video layers indicating an original and an edited version.

It is said that the video came from a mobile phone video source, but there are only two formats in mobile video formats (the old 3GPP format and the new MP4 format). However, the Channel 4 video is much higher in quality than either format can create today.

Within H-264 coding (used for MP4 format) there is also an extra component called Motion Vectors (VMC) which are used to predict motion on the temporal and spatial domain. Channel 4’s video has quite high quality VMC and it appears that this VMC came from a video camera and not from a mobile phone source.

Since the original video was originally in AVI and QuickTime format, this indicates that the original video is of high quality that originated from a video camera source, as mobile formats does not use AVI or QuickTime. If a change of mobile format to AVI or QT format is attempted, then the resulting video is likely to be of very bad quality. However, in this case the video is of very high quality.

The gun shot was not in synchronization with the video. Normally audio is always ahead of the video since video processing takes more time. In this case, the audio is very late indicating video and audio editing.”⁷

23. *Expert statement three:* Major A.P Bandara of the Media Centre for National Security, which comes within the purview of the Ministry of Defence and is based in Colombo, presented his findings to the Government, summarised in the Report. He noted a number of discrepancies in the video:

“The leg of a dead person lying prone on the ground rises in the air when the first victim is shot. Thereafter the leg slowly drops to its former position.

⁶ http://www.slembassyusa.org/archives/main_index_pages/2009/min_dmhr_pr_09sep09.pdf

⁷ http://www.slembassyusa.org/archives/main_index_pages/2009/min_dmhr_pr_09sep09.pdf

The second victim, though shot in the head, continues to have stiff leg muscles and reclines on his arms bound behind his back. Then he gradually leans back until he lies flat on the ground.

One of the other victims who appears to lie dead in muddy ground wears a clean white shirt.

The soldier who is shown killing the first victim is wearing a white T-shirt but the standard issue for Sri Lankan Army is of a different colour altogether. The second soldier has a very unmilitary growth of hair.

Even though the bodies are lying in waterlogged or muddy ground, not all the bloodstains from the fatal injuries have spread in a manner consistent with one another.”⁸

24. *Expert statement four:* Brigadier Prasad Samarasinghe of the Army’s Signals Corps gave the final presentation. It was reported that he had conducted both a technical study and field tests which confirmed the conclusions of the preceding presentations. His further observations were summarized in the report as follows:

“30 frames at the end of the video stream only contained a letter “A” against a blank background. This is not consistent with an original video from a mobile telephone source.

The video and audio streams were analyzed concurrently for consistency and several discrepancies were noticed which leads to the conclusion that the distance of the mobile telephone’s microphone from the weapon was 102 metres in respect of the first shot and 38 metres from the second.

A field simulation test using several mobile telephone brands revealed that, in order to maintain the size of image in the Channel 4 video, the mobile telephone camera should have been at a distance of approximately 3 to 5 metres from the discharged weapon.”⁹

25. On the basis of the presentations, the report detailed the conclusions of Minister Samarasinghe, who stated that the telecast of the video represented a “malicious attempt to play out a political agenda aimed at besmirching the name of Sri Lanka and denigrating the armed forces”¹⁰. He demanded a retraction of the video and story by Channel 4.¹¹

26. On 15 September 2009, the Sri Lankan Government made a statement to the UN Human Rights Council that “four separate investigations have now scientifically

⁸ http://www.slembassyusa.org/archives/main_index_pages/2009/min_dmhr_pr_09sep09.pdf

⁹ http://www.slembassyusa.org/archives/main_index_pages/2009/min_dmhr_pr_09sep09.pdf

¹⁰ <http://www.dailynews.lk/2009/09/12/sec02.asp>

¹¹ <http://www.lankanewspapers.com/news/2009/9/47762.html>

established beyond any doubt that this video is a fake”. On 16 September 2009, Secretary Wijesinha told BBC Radio that one reason for restricting the access of journalists to camps for internally displaced persons was that parts of the media had acted irresponsibly. In particular, he cited the “video shown on Channel 4 which showed what was meant to be an execution, it turned out that they had not even bothered to check it. It showed purportedly a dead person with a leg that gradually went down. I'm afraid when people tell lies, all of you get tarred with the same brush”.¹² On 18 September 2009, Sri Lanka's Daily News newspaper reported that the Sri Lankan High Commission in London had lodged a complaint against Channel 4 with the Press Complaints Commission. Attorney General Mohan Peiris was also reported to have consulted with a London-based legal firm with a view to filing a lawsuit against Channel 4.¹³

3. The Special Rapporteur's response to the reports

27. In acknowledging the Sri Lankan investigations and report, I concluded that “the views expressed do indeed raise several issues which warrant further investigation before it could reasonably be concluded that the video is authentic” and I noted that “the only way to do this is for an independent and impartial investigations to take place”. While recognizing the promptness of the investigation, I observed that two of the four Government experts were full-time Government employees, that the third had previously acted on behalf of the Government, and that “the basis on which the fourth was identified and selected as an expert remains unclear”. Accordingly, the studies could not objectively be characterized as meeting the requirement laid out in international law that such studies must be impartial. Nor was it possible for me to conclude that the investigations had been “thorough”, since I had not seen the original version of three of the four expert investigations, and the fourth of the investigations appeared to have originated as an Opinion piece in *The Island* newspaper,¹⁴ which had then been elaborated upon at the Government's request.¹⁵

28. On 17 September 2009, the Sri Lankan Government responded by refuting my characterisation of the investigation as lacking in impartiality. This led to press reports such as that of 19 September 2009 in the *Daily News* which suggested that “Prof. Alston has now eaten most of his harsh, ill-thought out and damaging comments about Sri Lanka”.¹⁶ The following day, the Ministry of Defence published a statement by one of the Government's experts, Mr Siri Hewawitharana, who “challenged the UN to disprove his analysis into the fake video clip of Channel 4”. He was quoted as saying: “I can tell the good Professor that if he is to put his experts against my conclusion I am happy to see any of them do any rebuttal of my analysis. ... [If Channel 4 had asked experts to look at the video, they] would have seen the forgery of the editing parts within a few seconds. ‘So why are we wasting time here’, Hewawitharana said adding that Prof. Alston insults

¹² http://www.dmhr.gov.lk/english/more_news.php?dmhrnind=304

¹³ <http://www.nation.lk/2009/09/20/politics.htm>

¹⁴ Siri Hewawitharana, “Channel 4 Video: The Technical Truth”, *The Island*, 31 August 2009, <http://www.island.lk/2009/08/31/opinion1.html>

¹⁵ <http://www.reliefweb.int/rw/rwb.nsf/db900sid/EGUA-7VYKR8?OpenDocument>

¹⁶ Lucien Rajakarunanayake, “Alston sings on lying channel”, *Daily News*, 19 Sept 2009 <http://www.dailynews.lk/2009/09/19/fea03.asp>

not only the Sri Lankan nation with lies and innuendoes, but is also questioning science and engineering”.¹⁷

29. The Government stated that the High Commissioner for Human Rights, Navi Pillay, had welcomed their report,¹⁸ although I am not aware of any public statement on the matter by the High Commissioner. She did, however, subsequently call for a full investigation into violations of human rights and international law that occurred during the civil war in Sri Lanka. In elaborating upon her comments, the Spokesperson for the UN Office of the High Commissioner for Human Rights, Rupert Colville, told reporters that “something like the Gaza fact-finding mission is certainly warranted given the widespread concerns about the conduct of the war in Sri Lanka”.¹⁹ The Sri Lankan Ministry for Disaster Management and Human Rights responded on 27 October 2009 to that suggestion, describing the High Commissioner’s approach as “unwarranted and uncalled for” and noted that although the statement followed the issuance of a US State Department report into abuses in Sri Lanka, it did not appear to take account of the fact that the US report did not purport to reach legal conclusions.²⁰ The Ministry reiterated that “the President has appointed a Committee of persons of proven integrity and independence to look into the incidents mentioned in the report” and that the President will “make known its position once this Committee has fulfilled its mandate and reported its conclusions.”²¹

4. Further forensic study commissioned by a Tamil group

30. Subsequently, in response to the Sri Lankan Government’s investigations into the video, a US-based pressure group – Tamils Against Genocide – commissioned a technical study of the video. Preliminary findings were released on 18 October 2009. The report was said to have been made by a US-based forensic company that took nearly three weeks to analyse the recording. They said: “[t]he video and audio of the events depicted in the Video, were continuous without any evidence of start/stops, insertions, deletions, over recordings, editing or tampering of any kind.”²² Although the group stated that it would release the final report on the video in early November, this has not yet happened. The key preliminary findings cited were as follows:

“No evidence of tampering or editing was discovered with either the video or audio portions of Video.

The blood pooled around the previous victim with the white shirt and with the victim of the second shooting appears to be consistent with blood from the brain, which would contain high amounts of oxygen giving the blood its bright color.

¹⁷ Sri Lanka Ministry of Defence, Public Security, Law and Order, 20 September 2009, at http://www.defence.lk/new.asp?fname=20090920_03

¹⁸ <http://www.lankamission.org/content/view/2587/1/>

¹⁹ <http://www.unmultimedia.org/radio/english/detail/84414.html>

²⁰ http://www.dmhr.gov.lk/english/more_news.php?dmhrnind=336

²¹ Ibid.

²² <http://www.tamilnet.com/art.html?catid=13&artid=30466>

The fact that it is still bright in color appears to be consistent with it being very recent.

The audio delay with respect to both gun shots' audio compared with each corresponding rifle recoil is consistent for some, if not most, camera cell phones that are capable of video recording.

Preliminary field test with a typical camera cell phone of similar audio qualities ... was able to record a MAK-90 (AK variant w/16" barrel) gun shot w/7.62x39mm ammo, with the camera cell phone being positioned in a similar camera field of view of the second gun shot, or 12 feet away from the muzzle, without any distortion of the audio.

The leg of an apparent previous shooting victim lying prone on the ground, down range and at the feet of the first victim, rises in the air when the first victim is shot, and then slowly drops to its former position. This reaction appears to be from the bullet that passed through the first victim and then striking the down range victim and would be consistent with a victim that was very recently shot that has not died yet.”²³

5. Investigation commissioned by *The Times* (London)

31. On 15 December 2009, *The Times* of London published the results of an evaluation of the videotape undertaken by Grant Fredericks, an independent forensic video specialist who was said to be an instructor at the FBI [Federal Bureau of Investigation] National Academy, and to have previously been head of the Vancouver Police forensic video unit. While I endeavoured to obtain a copy of the full report prepared by Mr. Fredericks, my efforts were unsuccessful. I have thus seen only the press coverage of the analysis, the principal reported elements of which are as follows:

“He found no evidence of digital manipulation, editing or any other special effects. However, subtle details consistent with a real shooting, such as a discharge of gas from the barrel of the weapon used, were visible.

‘This level of subtle detail cannot be virtually reproduced. This is clearly an original recording’

There was also strong evidence to rule out the use of actors. ‘Even if the weapons fired blanks, the barrel is so close to the head of the “actors” that the gas discharge alone leaves the weapon with such force it would likely cause serious injury or death’

The reactions of those executed was consistent with reality ‘The victims do not lunge forward . . . [they] fall backward in a very realistic reaction, unlike what is normally depicted in the movies.’

. . . ‘[T]he injury to the head of the second victim and the oozing liquid from that injury cannot be reproduced realistically without editing cuts, camera angle

²³ Ibid.

changes and special effects. No [errors] exist anywhere in any of the images that support a technical fabrication of the events depicted'
. . . '[C]ode embedded in the footage appeared to match with software used in Nokia mobile phones.' . . . 'The recording is completely consistent with a cell phone video recording and there are no signs of editing or alterations.'"²⁴

6. Analyses by experts commissioned by the Special Rapporteur

32. Once it became apparent that neither the Government of Sri Lanka, nor the Office of the High Commissioner for Human Rights would be commissioning independent and impartial evaluations of the videotape, I decided that it was incumbent upon me to do so in my capacity as Special Rapporteur. Indeed, the Government of Sri Lanka had suggested such a course of action on several occasions.

33. On the basis of advice received from independent experts working in the relevant fields, I approached three experts to provide me with their expert opinions on the authenticity or otherwise of the videotape. Each of these experts agreed to undertake the work on a pro bono basis, and each declared his full independence and impartiality in relation to this matter. The full text of the report provided by each expert is appended to this Note.

Expert 1: Jeff S. Spivack

34. Mr Spivack was formerly a Forensic Multimedia Analyst with the Las Vegas Metropolitan Police Department, and a calibration laboratory specialist for the US Air Force. He is a member of the American College of Forensic Examiners Institute, is a Certified Forensic Consultant, and has been qualified as an expert witness on forensic video analysis in courts throughout the US. He is now in private practice.

35. Mr Spivack's main findings were as follows:

(a) "The video and audio formats, codecs, bit rates, and video width, height, aspect ratio, and format profile (motion vector) properties are entirely consistent with multimedia files produced by a wide variety of mobile phones with video recording capability." Mr Spivack noted that while it is "theoretically possible to alter or delete metadata in a multimedia file, he was "unable to locate any commercially available software capable of deleting or altering meaningful file attributes." He stated that "altering the class of metadata recovered in this analysis . . . requires a high degree of technical proficiency."

(b) "Content analysis revealed no breaks in continuity, no additional video layers, and no evidence of image manipulation."

36. Mr Spivack reviewed each of the Sri Lanka expert arguments and found most of them to be inaccurate or faulty. For example:

²⁴ Rhys Blakely, "Sri Lankan war crimes video is authentic, Times investigation finds", December 15, 2009, at <http://www.timesonline.co.uk/tol/news/world/asia/article6956569.ece>

(a) Sri Lanka expert Dr De Silva stated that the colours of the bloodstains in the video suggested that the video was faked. Mr Spivack stated, “color reproduction accuracy is inherently unreliable for any photographic or video recording, regardless of domain or medium. Color levels, saturation, and related properties do not provide conclusive evidence of image manipulation.”

(b) Sri Lanka experts Dr De Silva and Mr Hewawitharana stated that the lack of audio synchronization with the video indicated manipulation. However, Mr Spivack stated, “video/audio synchronization for both events ranges from an audio delay of 0.068 to 0.122 seconds, well within acceptable limits. Again, as previously noted, audio and video quantization processes occur independently and the two tracks are synchronized and multiplexed in a separate process. Audio may be “ahead” of the video or it may be delayed, subject to a number of variables.”

(c) Sri Lanka expert Dr De Silva stated that there was no evidence of wind in the video footage, but it was present on the audio. Mr Spivack stated that there “is compelling visible evidence of wind activity corresponding to wind noise in the audio track, particularly at frame 333 as the individual operating the camera changed the position of the camera radically as a gust of wind was audible. Further, a cloud of what appears to be aerosolized biological material is visible drifting back toward the second shooter as wind gusts are also audible.”

(d) Sri Lanka expert Major Bandara stated that the bloodstains did not spread in a consistent manner. Mr Spivack stated, “Both the surface topography and level of water saturation appear to be highly variable in the area where bodies are present. It is quite true that the bloodstains would have individual characteristics. This is to be expected; in fact, it would be far more suspect if all the bloodstains appeared to be identical. Such a condition would be suggestive of effects inserted in a “copy and paste” manner.”

37. Mr Spivack noted two elements that he could not explain on the basis of the video he reviewed:

(a) He noted that the metadata retrieved from the video indicated that the encoded date was set at 17 July 2009. This date is not determinative, however, as the Philips mobile phone devices sold in Sri Lanka permit the user to set the date and time on the phone.

(b) At the end of the recording, there are 17 frames consisting of a red background with a white uppercase “A”. Mr Spivack stated that, “Without access to the specific device that generated this recording, it is not possible to determine if this text or title feature is consistent with the normal operation of the device using default settings, user defined settings, as a consequence of device malfunction, or as a characteristic of proprietary transfer and/or conversion software.”

Expert 2: Daniel Spitz

38. Dr Spitz, MD, is a specialist in forensic pathology and toxicology. He is the Chief Medical Examiner for Macomb County and St Claire County in Michigan, and

Clinical Assistant Professor of Pathology, Wayne State University School of Medicine. He is also an Adjunct Instructor at Macomb Community College, a Clinical Educator at Michigan State University School of Medicine, and a Staff Physician at Port Huron Hospital. He is Board-certified in Anatomic, Clinical and Forensic Pathology by the American Board of Pathology, is on the Board of Editors of the American Journal of Forensic Medicine and Pathology, and has authored several book chapters, numerous original articles and abstracts. He is the co-author of *Medicolegal Investigation of Death* (4th edition, 2006), and *Differential Diagnosis in Surgical Pathology* (2nd edition, 2009).

39. Dr Spitz summarizes his findings as follows:

“[T]he footage shown in this video appears authentic, especially with respect to the two individuals who are shown being shot in the head at close range by assailants using high powered assault rifles. The body reaction, movement and blood evidence of both victims are entirely consistent with what you would expect with execution type shootings. Furthermore, it appears that the other 8 apparently deceased individuals are also victims of homicidal violence . . .”.

40. While the testimony of Sri Lanka’s expert, Major A.P. Bandara stated that the physical response of the second gunshot victim was an indication that the video was fake, Dr Spitz stated that:

“As the victim is shot, he immediately collapses backwards, but appears to tense his body with contraction of his torso and lower extremity musculature. A large gush of blood pours from the back of his head and onto the ground behind his body. Over the next several seconds, his muscles relax and his back and head then come in complete contact with the ground. Blood continues to saturate the area under and around his head. This reaction is quite typical is an individual who sustains a gunshot wound to the head. The initial response to such trauma is often intense contraction of the skeletal muscles followed by relaxation over the next several seconds.”

41. In addition, Dr Spitz notes two questions which his inquiries were not able to resolve. These relate to body movements by two of the other apparently deceased victims, which he could not explain on the basis of the information shown on the video.

Expert 3: Peter Diaczuk

42. Mr Diaczuk is an expert in the scientific examination of firearm evidence and crime scene reconstruction. He is the Director of Forensic Science Training at the Center for Modern Forensic Practice at John Jay College of Criminal Justice, City University of New York. He is qualified as an expert witness on firearms, trace evidence, and crime scene reconstruction for courts in New York, New Jersey and Connecticut. He is a Certified Firearms Instructor, and is the current President of the New York Microscopical Society, on the Board of Directors of the Northeastern Association of Forensic Scientists,

and a member of the American Society of Testing and Materials and the American Academy of Forensic Sciences.

43. Mr Diaczuk concluded that, “from the videos that I took of an AK-47 class rifle being fired from both hip and shoulder, I am convinced that the minimal recoil seen in the video submitted was accurate for an adult male holding and firing a Kalashnikov class firearm.”

44. Mr Diaczuk’s findings with respect to the first apparent shooting in the video were:

(a) “At the moment of discharge of the firearm, at frame #41, it moves rearward, as do the shooter’s arms, as seen clearly by both of the elbows suddenly jerking rearward and then forward again in the next frame, #42. When the firearm moves rearward as a result of the recoil from discharge, it appears to move in-line with how it was held, and then forward again in the same linear fashion. This is consistent with how a shooter anticipates recoil and recovers after firing the shot. Accompanying the discharge is the plume of high-pressure gases that is expelled from the muzzle, visible to the left and lower left of frame # 41.”

(b) The recoil and the high-pressure gases (muzzle blast) “are indicative of firing live ammunition.”

(c) In frame # 41, the apparent victim’s head “lurches forward (away from the muzzle)” at the moment of discharge. “This lurching forward is so sudden that the excess cloth used to tie the blindfold is seen to move from what was merely gravity-positioned, to an airborne position.”

(d) “Coinciding with the firearm discharge and forward head movement of the person seated in the foreground is the sudden body movement by the person lying directly in front of him.” This movement could be due to the bullet passing through the body of the first person and hitting the second, as “the energy and ability of the bullet from the Kalashnikov class of firearms to pass through considerable obstacles is well known... I can state from experience that bullets fired from an AK-47 firearm, using 7.62 x 39 mm full metal jacket ammunition, have gone through 6 inches of wood consistently.”

45. With respect to the second apparent shooting, Mr Diaczuk found that:

(a) “At the moment of discharge of the firearm, both excess cloth “tails” of the blindfold on the victim move suddenly to the side... The sudden movement of the blindfold is consistent with the turbulence generated from high-pressure gases that are expelled from the muzzle at discharge. The firearm (and the sling attached to its fore end) clearly moves rearward and slightly upward in the same frame that shows the blindfold movement (i.e. when the shot was fired). In this shooting, the shooter is apparently holding the firearm to his shoulder, which provides the pivot point causing the muzzle to rise slightly in addition to its rearward movement. This is fully consistent with the discharge of a live cartridge and not a blank cartridge.”

(b) “There is a visible defect that develops in the victim’s head on the left side above his ear. This occurs in the same frame as the firearm is discharged, and appears to worsen in the following frame.”

* * *