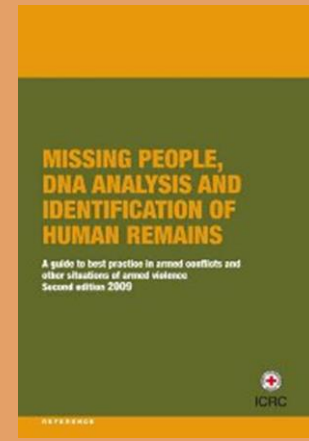


# ESTABLISHING IDENTITY IN CONFLICT



## The Crucial Role of Forensic Genetics in Human Identification

By Stephen Fonseca,  
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# Case Study: Falklands War (Malvinas)

## Reuniting families after 38 years



# THE FALKLANDS WAR 1982



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The relative of an Argentinean victim at a tribute to the fallen victims in 2009 | CREDIT: Grupo44

Falklands War Lasted 74 days: 255 British Combatants; 649 Argentine Combatants died

**Agonizing wait for the truth:** when your loved one doesn't return after battle alive or dead.



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# Darwin Cemetery - 1983



It is the year 1983. British soldiers perform a gun salute in honour of the Argentine soldiers buried in Darwin cemetery. When the war ended in June 1982, some of the fallen Argentine soldiers were buried in temporary graves close to where they died. A second proper burial was then undertaken under the command of British Army Colonel Geoffrey Cardozo.

Courtesy Geoffrey Cardozo



Complying with the Geneva Conventions and ensuring that each fallen combatant of the enemy is treated with respect, dignity and buried in a marked grave, even those without “identity”



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Burial Marker  
Inscription:  
“Argentinian soldier  
known only to God”



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In June 2017, Father John Wisdom blessed the site and ICRC forensic specialists before the start of the exhumations. Fourteen experts came from Argentina, Australia, Chile, Mexico, Spain and the United Kingdom.

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Prior to any attempt at supporting the families and communities with human identification efforts, understand the needs, culture, religion and tradition as these impact the humanitarian approach to forensic action



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After carefully pulling out the crosses and tombstones, forensic logicians used a small excavator to remove the earth above the coffins, and then small shovels and trowels to delicately unearh the bodies, wrapped in white bags. After 35 years in damp soil, the wood of the coffins had totally disintegrated.

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There are no shortcuts to identifying bodies. This starts with a professionally managed exhumation efforts that preserves all available material for a multi-disciplinary process of analysis.



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Forensic Anthropology Team.  
In 1997, he headed the forensic team commissioned by the Cuban government to retrieve the body of Che Guevara in Vallegrande, Bolivia. He regularly collaborates with the ICRC.

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No substitute for  
expertise and experience



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The forensic work continues on the autopsy table where the mortal remains are analysed in-depth. In addition to documenting findings which will assist in the identification (e.g. gender, age, stature, dental traits), the forensic specialists collected small samples of skeletal material (teeth and bones) for later DNA testing by genetics laboratories.

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In the forensic laboratory, all the bodies are X-rayed. The forensic radiologist, together with the pathologists, anthropologist and odontologist, searched for clues, such as old fractured bones or specific dental work, that could help match the bodies to one of the medical files handed over to the ICRC team by the authorities or families of the deceased.

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The specialists had to complete the forensic reports and enter all the data collected for each case within 24 hours of examining each body, which was not an easy task. “But,” said Morris Tidball-Binz (right), “It was worth the effort. Everyone has the right to be identified after death, including those who die on the battlefield.”

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Identification is never 100%. Confirming identity is a process, building confidence by collecting more and more evidence that supports a hypothesis but ensuring that there are no unexplainable discrepancies



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Forensic pathologist Mercedes Salado Puerto has just sealed DNA samples into a plastic pouch, which bears her signature and that of Morris Tidball-Binz, the head of the project. Their signatures on the sealed pouch served as a guarantee of the chain of custody until the samples arrived at the forensic genetics laboratories in Argentina, Spain and the United Kingdom. In 2013, Mercedes worked on the exhumation of Chilean poet Pablo Neruda.

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- Humanitarian forensic action to identify victims of conflict, disasters and migration is about maintaining strict scientific rigor and rules of evidence management in the process but also acknowledging the humanity and compassion as two essential ingredients. Families and community engagement is core.



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# ‘They’re people, not bodies’ – Geoffrey Cardozo, the British officer who highlights the human factor in war

Ex-colonel and co-nominee for the Nobel Peace Prize Geoffrey Cardozo CBE, who became known for identifying and burying Argentine soldiers fallen in combat, recalls the crude post-war scenario and sends out a conciliatory message beyond the territorial dispute and nationality.





# Falklands: Argentinian soldiers' relatives to put names on graves

**Identification of previously unknown soldiers made possible thanks to DNA testing and humanitarian initiative**



📷 Argentinian Falklands war veterans at Darwin cemetery in 2012. Photograph: Marcos Brindicci/Reuters

122 graves of the unknown exhumed, and those soldiers identified. How?

1. British military Leadership complied with IHL rules and showed respect and compassion for the enemy dead
2. Diplomatic agreement reached between British and Argentine government
3. ICRC acting as an intermediary, and a highly experienced, multidisciplinary forensic team deployed
4. A multidisciplinary identification process followed
5. Engagement with the families, and their active participation in the formalities and process
6. Advancement of DNA analyses and its crucial role in the multidisciplinary approach to identification



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# IHL and Identification of the Dead



Humanitarian forensic support was envisaged by Henry Dunant as early as the Franco-Prussian War of 1870, when *"he visited and comforted the wounded brought to Paris and introduced the wearing of a badge so that the dead could be identified."*

<http://www.icrc.org/eng/resources/documents/misc/57jnvq.htm>



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# Prevent Combatants from going Missing/Unaccounted For

- Military personnel often go “missing” because the search, recovery, identification and burial approaches are lacking
- Military Establishments should:
  - Provide personal identification
  - Provide durable identification, such as dog tags
  - Pre-deployment collection – descriptive features
  - Collection of fingerprints, medica/dental information sources, and DNA samples
  - Information and samples standardized and centralized
  - Build medicolegal death capacity in military
  - Avoid calling on families after the fact and relying on indirect associations





# Challenges in Active Conflict

- Failure to apply IHL rules
- The large numbers of dead preclude a full-scale recovery
- Active conflict prevents body recovery; loss of recognition
- Theft of enemy personal possessions and belongings
- Sharing clothing/uniforms
- Combatants equipped with weapons, not burial implements
- Civilians forced to bury the dead; no basic descriptive information, no tracking, unmarked common graves



# Challenges in Active Conflict

- Bodies & unexploded ordinance commingled
- Bodies deliberately booby-trapped
- Fear of contaminated bodies (CBRNE)
- Profilic scavenging and degradation
- No forensic personnel in the battlefield
- Bodies used as weapons of psychological warfare
- Bodies not accessible (e.g. water events)
- Dead not reported; Snr officer collects salaries (fraud)







# Lessons Learned: DNA analysis is part of a process

- It is a very powerful and reliable identification tool but must be backed up by a solid scientific base, international best practices, an adequate level of expertise
- Requires a very high standard of laboratory operations
- One element of the search, recovery, and identification **process**
- Missed or wrong identifications easily possible if relied on without best practices, expertise, and awareness of potential errors and limitations





# Lessons Learned from Conflict:

## Kinship and Matching – Software and Expertise

- Due to high computational requirements, Kinship DNA matching has to be performed by validated or widely accepted software solutions (DNAview, Bonaparte, iFamilies etc.). These solutions provide a robust tool to handle big DNA databases and complex Kinship DNA matching with capabilities to deal with different genetic phenomena mutations, rare alleles, specific population corrections, etc.
- Many laboratories don't have this kind of software and do simple pairwise manual calculations and are unable to perform more complex kinship scenario calculations.
- Multiple missing persons from the same family can be challenging to distinguish.
- The interpretation of kinship matching results requires expertise and experience. It is essential to have qualified professionals who can evaluate complex kinship scenarios and produce reliable DNA reports.



# Lessons Learn from Conflict:

## EXPERTISE IN PROCESSING AGED DEGRADED BONE SAMPLES

- For degraded, burned, or otherwise compromised bone, specialized and optimized extraction methods are required, such as demineralization protocols for higher success rates. Commercially available extraction kits sometimes are not efficient enough
- All methodology must be adapted, optimized, and internally validated for low-copy number DNA samples, with enhanced sensitivity to detect these minute amounts of DNA. All these processes are accompanied by anticontamination protocols that are usually also missing and a source of sample contamination
- Interpretation of DNA profiles obtained from bones and in general LCN samples requires also experience and expertise dealing with stochastic variation, inhibition, human and bacterial contamination, degradation, etc. Samples of lower quality require duplicate testing and a consensus approach for reporting
- All these points are common challenges in laboratories and require investment in training, equipment, and time.



# Lessons Learned From Conflict:

## General Observations of Laboratory Issues

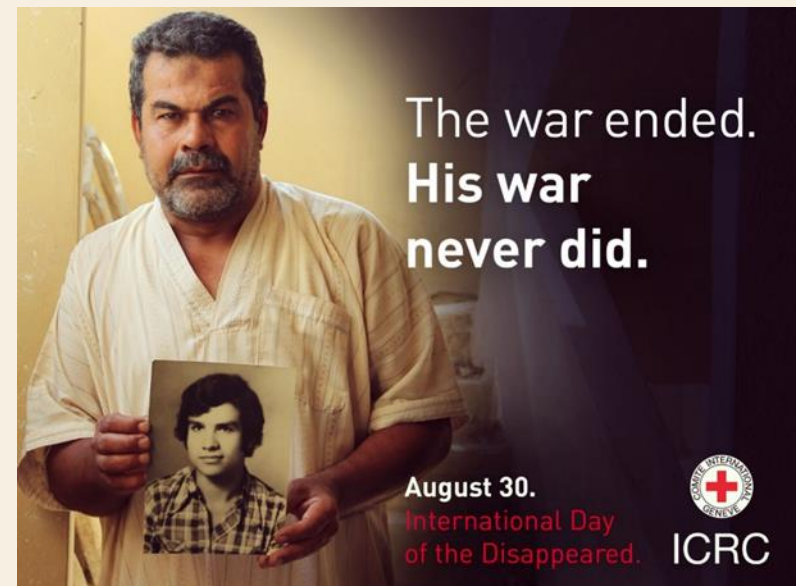
- DNA laboratories set up in existing buildings with footprints incompatible with the needed workflow and separation of working spaces
- Poor management of authorized staff movement and access
- Poor protection measures to avoid contamination measures – especially with bone samples are, due to the low DNA content
- Lack of understanding of the ISO 17025 requirements
- Labs overwhelmed with casework, lack of staff and funds leads to corners being cut on many QA/QC measures and impacting the quality and reliability of results.
- Equipment maintenance – a costly requirement for any laboratory but often neglected
- Poor sample storage





# Lessons Learned Conflict: Engaging with Families

- AMD and BRS collection requires trained personnel
- Family meetings - pre-planned; correct relatives invited
- Finding biological relatives is never guaranteed
- Acknowledge culture, tradition and religion when engaging with families
- Family privacy respected
- Family engagement – a two-way street
- Not each family is the same - different combinations of multiple first-degree relatives are needed.
- Inaccurate relationship – poor collection or false paternity- can lead to a false negative.
- Always pursue multiple reference samples whenever possible, even if it is a parent or child of missing persons.





# THANK YOU

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# International guidelines for DNA in DVI

- Prinz M., Carracedo A., Mayr WR., Morling N., Parsons TJ., Sajantila A., Scheithauer R., Schmitter H., Schneider PM. (2007), '**DNA Commission of the International Society for Forensic Genetics (ISFG): Recommendations regarding the role of forensic genetics for disaster victim identification (DVI)**', Forensic Sci Int. Genet. 1(1), 3-12 (Prinz et al. 2007)
- SWGADAM – 2014, **Guidelines for Missing Persons Casework**
- ANSI/ASB BEST PRACTICE RECOMMENDATION 006, 2019 **Best Practices Recommendations for DNA Analysis for Human Identification in Mass Fatality Incidents**

