F18 When Bad Science Leads to Incorrect Guilty Sentences: Reconsidering the Lorandi-Bugna Case

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Learning Overview: After attending this presentation, attendees will have learned how a cold case, in which scientific evidence played a key role in arriving at a life sentence, can be reconsidered under the lens of more recent developments in science that prove how the original scientific evidence was destroyed by an improper manipulation and bad science tried to reconstruct it, without detecting important contradictions that may have exonerated the defendant.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by showing how a thorough critical analysis of scientific evidence can detect contradictions that undermine that very evidence. This presentation will build competence on how to understand whether the technical witnesses have correctly analyzed the objects on which scientific evidence had focused or whether the pressure put on them by the prosecutor had biased them to the extent that they could make macroscopic, undetected errors. This presentation will also impact attendees by showing how advancements in science may bring out new and different evidence.

The Lorandi-Bugna case is an Italian cold case that goes back to February 2007, when Clara Bugna, a 54-year-old woman was murdered in her home in a small village near Brescia in northern Italy. She was found strangled in her apartment, with the door locked (Clara's keys were never found). An iron was found turned on, a couple of freshly ironed shirts were discovered, and a half-ironed short was on the ironing board.

The murder was discovered because Clara's employer (the owner of a restaurant where Clara worked as a cook), alarmed since she did not show up, called her husband, Bruno Lorandi, who was at work, and they discovered the corpse.

Bruno Lorandi was suspected of having murdered his wife, despite claiming his innocence. He was accused of having staged the crime scene after having killed Clara. Therefore, the investigation focused on assessing whether the iron was switched on before or after he left the apartment to go to work.

To this purpose, the electric power company was asked to provide the energy consumption measured by the electric meter, and the iron was tested to compare its electrical consumption with the energy measured by the electric meter. The electric meter was a new-generation (at that time) electronic smart meter that could be read remotely, though the remote access routing had not yet been thoroughly tested. An attempt at remotely reading the counter was made, then aborted due to a problem on the communication line. It was discovered that, due to an undetected bug in the meter software, an aborted reading operation caused the internal clock to lose its alignment, so the stored energy values could not be attributed to the corresponding time. A second attempt was made and was also aborted, which worsened the situation.

Despite, due to this bug, the internal data being fatally corrupted, the expert witnesses charged with the electric energy consumption analysis by the prosecutor claimed to have succeeded in reassigning the energy consumption to the correct time and, without considering the high measurement uncertainty in their tests, concluded that the iron was switched on a few minutes before Bruno left the apartment. Bruno was sentenced to life imprisonment and the sentence was confirmed by the appeal court and the Italian Supreme Court.

Recently, a new technical analysis of the energy consumption, based on more recent analysis techniques, discovered a blatant incongruity in the original energy reconstruction: a consumption of several kWh for about four hours was assigned to a day, after the murder was discovered, when the apartment was definitely empty and all loads were switched off as the apartment itself was sealed off by the police. This casts a more-than-reasonable doubt on the validity of the reconstruction.

Based on this, Lorandi requested his case to be reconsidered and a decision is pending at the time this abstract was submitted. Regardless of the conclusion, this case appears to be very instructive because it shows how a superficial analysis of strongly corrupted evidence may lead to wrong conclusions.

Bad Science, Corrupted Evidence, Innocence

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