

Machado, Helena; Santos, Filipe (2011), “Popular press and forensic genetics in Portugal – Expectation and disappointment regarding two cases of missing children”

Abstract

Two cases of missing children in Portugal (*Joana* and *Maddie*) have recently highlighted the dilemmas and contingencies associated with the technology of “genetic fingerprinting” for forensic purposes in the context of criminal investigations. The purpose of this article is to analyze the popular press’s discourses and representations around forensic genetics in the context of those two highly mediatized criminal investigation cases. The symbolical construction and representation of forensic genetics by the media presents a form of public exposure to beliefs on forensic genetics’ characteristics and potential, which are blended with popular cultural contexts that are constructed with reference to images of a super-science which may carry consequences in the public understanding of forensic science. The media coverage of both cases and their actual disclosure resembles the patterns of a *CSI effect*, insofar as real science’s capabilities and limitations are placed against fictionalized representations of forensic science.

1. Introduction

This article's objective is to focus on the popular representations of forensic genetics from the analysis of the tabloid press's narratives about DNA evidence's uses and promises in criminal investigation contexts regarding two cases of missing children (*Joana* and *Maddie*) in Portugal. We will argue that the Portuguese tabloid press's perceptions and representations of forensic science and DNA technology are constructed with references to an idealized and unrealistic image portrayed by forensic science-fiction TV shows. These press's narratives might reflect a disproportionate and excessive belief in the effectiveness and reliability of DNA profiling technologies. On the one hand, by creating expectations regarding the categorical certainty of the evidence and the objective, immediate and 'easy' way they are obtained ([Hughes and Magers, 2007: 261](#)). On the other hand, by reflecting some disappointment and scepticism as the evidence-dependent investigation fails to meet the assertive conclusiveness and psychological closure of the fiction series ([Podlas, 2006](#); [Hughes and Magers, 2007](#); [Schweitzer and Saks, 2007](#)).

In order to empirically substantiate our reflexions, we gathered and analysed press materials proceeding from one Portuguese tabloid newspaper – the *Correio da Manhã* – which covered the cases of two missing children, Joana Cipriano Guerreiro and Madeleine McCann, that were given wide media attention and dubbed by the media as the *Joana* and *Maddie* cases. We will also adopt these designations when referring the cases. Since we peered into the press for a mirroring of popular representations of forensic science, we chose to sample news items from the highest circulation¹ Portuguese newspaper, which is also a tabloid style daily newspaper which tends to give

a more popular and practical disclosure of science (Mendes, 2003: 50), directed at an implicit audience with a lower cultural capital than the audiences of higher-market press. In the context of the coverage of complex criminal cases, forensic science, and in particular, DNA profiling, becomes prominent in the tabloid press as it appears within a cultural context which, by influence of fictional portrayals of forensic science, conveys the promise of fast and assertive investigative results.

2. DNA evidence and the paths to credibility

Forensic genetics appeared as the establishment of a second generation of forensic science (Murphy, 2007), a change of paradigm regarding traditional forensics (Saks and Koehler, 2005; Broeders, 2006). Genetic fingerprinting, thus named due to the analogy with traditional fingerprinting (Lynch and Jasanoff, 1998: 676) and the conception of its individual uniqueness, was created in mid-80's of the XXth century in England by Alec Jeffreys.

The new forensic discipline, heir of molecular biology, caused the traditional forensic sciences of identification and individualization, such as firearm and document analysis or even dactyloscopy, to face some criticism and distrust due to the alleged lack of scientificity of their methodologies and the miscarriages of justice for which they were ascribed responsibility (Broeders, 2006; Saks and Koehler, 2005). The *Innocence Project*, created by Barry C. Scheck and Peter J. Neufeld which aims to help individuals who claim to have been victims of judicial errors through post-conviction DNA analysis, points to several traditional forensic sciences as having responsibilities in 65% of the analysed miscarriages of justice².

According to [Saks and Koehler \(2005\)](#) reasons for criticism towards traditional forensic science, such as the lack of scientific base or the possibility of fraudulent testimony, do not apply to forensic genetics as it is performed today. Firstly, forensic genetics are rooted within a consolidated scientific discipline with a wide empirical base such as molecular biology. Secondly, courts and scientists seek to eliminate non-scientific practices. And thirdly, forensic genetics' analysis results are presented in a match probability format, rather than a categorical binary formatted conclusion as it would occur with other individualization techniques (Saks and Koehler, 2005: 893). The main argument for the new paradigm is that it is an application of molecular biology and, as such, it enforces the norms and practices of a normal science model ([Robertson and Vignaux, 1995](#)), making it 'more scientific' than traditional forensic sciences. Nevertheless, the application of 'pure' science on an 'impure' field such as forensics doesn't exempt it from errors ([Dror and Charlton, 2006](#)), contingencies or local idiosyncrasies due to insufficient technical standards ([Costa, 2003](#)). The notion that DNA evidence can be used to convict as well as to exonerate, particularly in post-conviction DNA analysis, makes it appear neutral (Broeders, 2006: 152), ignoring the specific contexts of production ([Jasanoff, 2006](#)).

2.1. The limits of forensic genetics in the Portuguese context

Despite the notorious advantages that forensic genetics introduced in criminal investigation, namely the possibility to identify an individual's distinct DNA fingerprint from just a few cells with very low error probability (Jasanoff, 2006: 330), scientific activities for forensic purposes in certain contexts can be subjected to limitations and contingencies that might render justice-making technologies and equipments completely

useless. However, regardless of ongoing discussions about the correct interpretation of the use of forensic DNA data, this sort of evidence is still seen by many as more reliable than many other types of 'evidence' (Cole, 2001; [Jasanoff 2006](#)). The Nuffield Council on Bioethics Report (2007: 67) states that not only cases with DNA evidence are most likely to reach trial, but also tend to result in harsher sentences.

A Portuguese sociologist, Susana Costa (2003), performed a non-participant observer study in a national laboratory from 1992 to 1997 where she studied the steps of forensic evidence's chain of custody and the practices and translations that different actors carried out in their functions. From that study we emphasize three contingency factors that, although the study was made a decade ago, we believe are still relevant in the Portuguese forensic science scene. We are referring to insufficient crime scene protection and evidence preservation, laboratorial procedures and equipment and the judicial perspective of scientific evidence³.

In regard to crime scene protection and evidence preservation, Susana Costa reports that the first agents on the scene frequently overlook proper protection and don't always collect all the potential evidence in the shortest period of time after the crime scene has been found. Furthermore, the fact that untrained or non-forensic agents proceed to the collection, transport and storage of the evidence usually results in defective labelling, degradation or contamination.

A second factor concerns laboratorial procedures. Costa describes situations that span from the lack of standardization and harmonization of procedures between different laboratories, conditioning and adaptation of normal functioning to the availability of financial resources, situations of sheer negligence, equipment failures and lack of sterilization and maintenance (Costa, 2003: 153-6).

The third contingency factor is related to the judicial uses of scientific evidence. In fact, the presentation of DNA evidence at a trial has been characterized by ‘difficulties’ (Nuffield, 2007: 72) both historically and even in the present day. As we mentioned earlier, the DNA analysis reports express probabilistic match coincidences. However, expert testimonies in court are not always presented using forensic technical language. The accurate presentation of complex scientific and statistical information to a non-scientific audience, which might include mostly members of the legal profession as well as the jury, can be particularly difficult (Nuffield, 2007: 68). In countries such as the UK or the USA, the litigation process is almost entirely governed by ‘adversarial’ procedures – that is, each litigant part is given the opportunity to present to the court the material which supports and grounds its case, whether it appears in the form of material evidence, arguments or testimonies, and to test as thoroughly as possible the evidence, arguments and testimonies presented by the other part. Forensic scientists, legal scholars and social scientists have pointed out that common law systems often contribute to an artificial polarization of scientific issues in legal disputes, encouraging expert witnesses to ‘take sides’ (Oddie, 1991). Adversarial proceedings have also contributed to construct and reinforce the scientific credibility of various emerging technologies. As Sheila Jasanoff argued, in the case of DNA typing, the adversarial process was both crucial and successful in exposing unacknowledged and untested assumptions related to this technology, but also determinant to the process of assessing its scientific and judicial credibility ([Jasanoff, 1997](#)).

In Portugal, as in most ‘European continental judicial systems’, the rules of admissibility of scientific evidence and expert witnesses are related to a distinctive framework associated to the same particularities of the inquisitorial legal systems. In fact, the judge has a rather active power in trial settings – he/she plays a central role in

the examination process and in the imposing of the rules of evidence and court procedures ([Margot, 1998](#)). In Portuguese courts, the scientific evidence is admitted by the 151st article of the Portuguese Penal Process Code, and must be requested by a specific court order in the form of a judge's dispatch (n. 1 of article 154th, Portuguese Penal Process Code). The parties can make suggestions or even present their own experts reports, but it is the judge who decides which evidence will be admissible in court and who appoints the expert witnesses. Often, the judge will perceive genetic expert reports as a type of evidence close to an absolute truth ([Machado, 2008](#)), or at least as constituting all that is worth knowing about the trial in question, submitting to the 'wonderful' world of science ([Jasanoff, 2006](#)).

Unlike adversarial legal systems, which allow for the presentation of opposing viewpoints before a relatively passive judge that then adjudicates, inquisitorial trials actively inquire the parties for factual truths and expert reports are perceived as one way of going about this (Cooper, 2004). Within civil proceedings, it is possible in Portuguese courts for a judge to issue a sentence based on free appraisal of the evidence and his or her persuasion⁴. However, in criminal cases scientific evidence is subtracted from the judge's right to free appraisal of evidence. If judges disagree with an expert witness or report, they must justify their objections. There is also the matter that, according to article 159th of the Portuguese Penal Process Code, only authorized public laboratories, or others contracted by them, may conduct forensic exams for judicial purposes. In sum, expert evidence in Portugal is rarely subjected to discussion, contestation or dismissal by the parties and by the judge.

3. The *CSI effect*

In spite of the peculiarities and local contingencies of the Portuguese judicial uses of forensic science and DNA technology, and its relatively low publicity, there has been an increasing dissemination of popular representations of forensic science in Portugal, mainly through imported television series. In *CSI*, the characters that portray forensic technicians are able to solve complex cases by resorting to the identifying power of DNA. Popular representations of forensic science are susceptible of being largely constructed by reference to fictional portrayals of science. And *CSI* doesn't render plain science but more of a 'super-science' (Schweitzer and Saks, 2007: 358), contributing to public perceptions that real world forensic science can be always as accurate and infallible (Podlas, 2006), thus raising public expectations on its routine real world applications.

The so-called *CSI effect* concept appeared in North-American media⁵ based in alleged statements of prosecutors, lawyers and judges who claimed that juries were being influenced by the popular TV show. This designated *effect* loosely points towards a correlation between the exposure and consumption of the TV show where forensic science is somewhat glamorized (Peterson and Legget, 2007: 648), and the exaggeration or underestimation of scientific evidence. Several authors (Cole and Dioso-Villa, 2007; Hughes and Magers, 2007; Podlas, 2006; Shelton *et al.*, 2006; Tyler, 2006) have approached this so-called *effect*, pondering its hypothetical existence and attributed characteristics. Some suggest that it doesn't exist as it is claimed or that it is a mere reflexion of a popular culture that tends to place greater expectations in science and technology as a whole in what could be called a wider *tech-effect* (Shelton *et al.* 2006), or even a media effect (Podlas, 2006). Cole and Dioso-Villa (2007) have identified six types of claims in the media concerning the *CSI effect*. For the purpose of this article we

shall be referring to a mixed sort of typification that emerges from the literature on the subject and from our own empirical data:

- a) Strong accusation – The defence is negatively affected due to the jury’s exaggerated beliefs in the capabilities and reliability of forensic science, insofar as any piece of evidence produced by forensic science, even if it raises questions about its probative value, it assumes great importance in a conviction. There is a lower standard of reasonable doubt.
- b) Weak accusation – The prosecution is affected because the jury’s expectations surrounding scientific evidence are not met, that is, if there is no scientific evidence or it appears to be weak or not backed up by other evidence, the standard of reasonable doubt is raised, with a tendency to acquit the defendant.

Both versions presume an influence or bias related to surrounding cultural contexts. In the next section we analyse the press’s views concerning the use of forensic science in the *Joana* and the *Maddie* case. As Gary Edmond puts it: “*legal settings provide a potentially rich opportunity for the analysis of the context and commitment influencing the public understanding of science.*” (Edmond, 1998: 84). Hence, the media coverage of criminal cases where forensic science eventually steps in the limelight is likely to play an important role in the public understanding of science as the media operate as translators between scientific knowledge and/or techniques and lay people who are more likely to construct their representations of science from the imagery collected from the media (Farr, 1993: 191). There is no evidence, legal professional’s statements or public opinion studies suggesting the occurrence of a *CSI effect* in Portugal. However, we proceed from the assumption that the television series may have produced considerable impacts in the public and its representations of forensic science. Since its debut in Portugal it has consistently proven to be a ratings

success both in broadcast and cable channels⁶ and, like in other countries where the series is aired, it is claimed to be responsible for an increasing demand and enrolment in forensic medicine and criminology courses⁷.

According to Richard Ericson, the media does not stand apart from the communicated reality. However, the stories must be told within a framework which resonates with popular reality (Ericson, 1998: 84-8). Thus, journalists are not mere detached observers, but rather they are members of an 'interpretive community' who shares collective interpretations as part of a broader cultural context, but also as a result of their own interactions (Zelizer, 1993: 219). Tabloid newspaper narratives are therefore influenced by surrounding cultural references and context, but also by the journalists' perceptions regarding the socio-demographic profiles and expectations of their implicit audiences.

We will discuss how the narratives developed by the *Correio da Manhã* merge into the 'super-science' imagery portrayed by *CSI*. The potential impacts arise from the dialogues established by the tabloid press with its implicit audience and readership, which is mainly constituted by lower socio-economic reading groups of the Portuguese population. We draw on the assumption that these social groups are more dependent of the information conveyed by the sensationalistic and 'commercial' media (Guibentif *et al.*, 2002: 118; Sparks, 1992: 285) as they have presumably more limited 'interpretative tools' as well fewer means of access to other sources such as the *World Wide Web*⁸, at least when compared to groups with higher levels of education. Hence, the tabloid's implicit audience appears to be more dependent on the agenda, contents and rhythm projected by the media (Morley, 1983: 113).

Education levels of Correio da Manhã readership (%)		
Primary education	Secondary education	Higher education
74,7	19,1	6,1

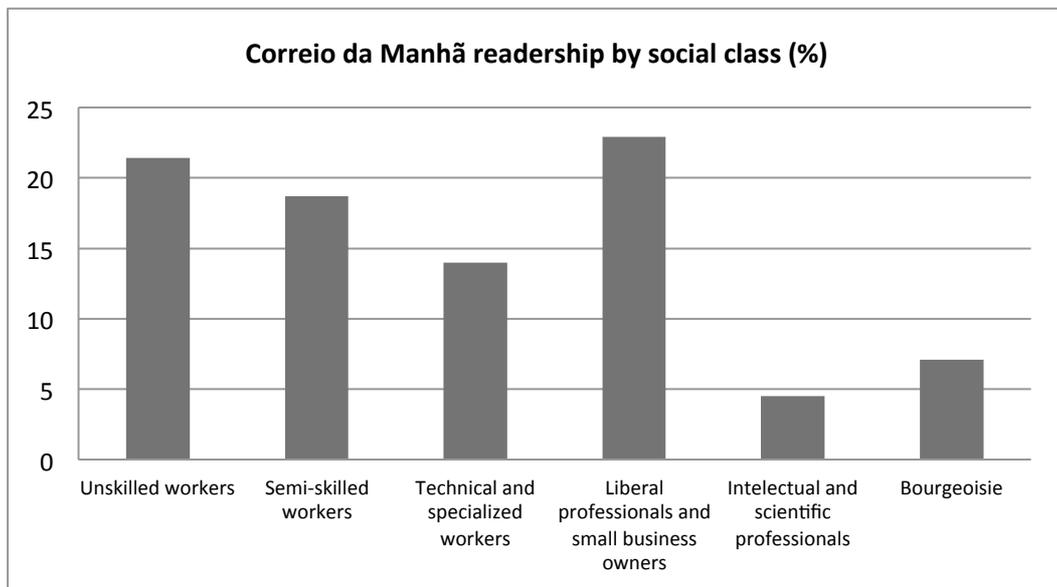
Source: Obercom (2006) *Media Diets in Portugal: Television, Press, Radio and Internet. Working Report*. URL (consulted February 2009) <http://www.obercom.pt/client/?newsId=234&fileName=wr1.pdf> .

The pervasiveness of cultural references such as *CSI* may represent an example of the merger of fact and fiction, or ‘infotainment’, which is increasingly becoming a characteristic of modern news media (Jewkes, 2004: 26; Surette, 1998: 53). The newspapers reporting of cases which elicit the audience’s emotional involvement, particularly in the tabloid press, provides routes for the public’s engagement as ‘mediated witnesses’ by which the readers are invited to take sides, to identify themselves with victims and their victimhood and to ‘experience’ crime for personal consumption (Peelo, 2006: 160). This sort of narrative framework may contribute to the occurrence of the aforementioned *CSI effect* as well as to a ‘trial by the media’ insofar the readers are presented with supposed evidence while being simultaneously provided with interpretative tools and references with which to evaluate them, helping them ‘take sides’. This is done mainly by using to analogies between that which is being reported and the *CSI* TV show.

4. Methodology

The methodology used in our analysis was grounded on an interpretative and qualitative research methodology, which is characterised by a hypothetic-inductive perspective, based on the principles of the grounded theory ([Altheide, 1996](#); [Strauss and Corbin, 1990](#)) applied to a collection of newspaper articles extracted from the *Correio da Manhã*. This newspaper is considered to be representative of ‘popular’ or tabloid press and aimed at lower-income, less educated public (Guibentif *et al.* 2002: 118). The ‘popular’ press is connoted with the effort of presenting a seemingly closeness to reality which is accentuated by an entertaining and lively style of reporting, grounded on a more colloquial language, brief and simple themes, frequently concerning local interests, and strongly opinionated columns (Ericson *et al.*, 1991: 35).

The graph below represents a distribution regarding the socio-economic strata of *Correio da Manhã*’s readership, collected from a study carried out in Portugal aimed at the representations of crime in the Portuguese press and its impacts on the public (Guibentif *et al.* 2002).



Source: Guibentif *et al.* (2002: 118)

In the *Joana* case the collection period spanned from 15 September 2004 until 26 May 2006, gathering a total of 129 news articles. As for the *Maddie* case the collection covers the period from 4 May 2007 until 23 July 2008, with a total of 384 news articles.

From the whole collection process, we selected the news articles which incorporated references to forensic science, i.e., descriptions of procedures, techniques, results, consequences, as images and representations of forensic science could be extracted from the tabloid press's narrative. The final selection from both cases added to 185 news articles (*Joana* (46); *Maddie* (139)), corresponding to 35.66% and 36.2% of the total news articles collected in each case respectively. Our sampling and analysis is not meant to be statistically representative but was made in order to provide theoretical representativeness ([Strauss and Corbin, 1990: 176](#)).

5. The cases (*Joana* and *Maddie*)

On September 2004, an 8-year-old girl was reported missing in the village of Figueira in the Algarve, not far from where Madeleine McCann would later be reported missing. Joana Cipriano Guerreiro's mother Leonor Cipriano reported to the *Republican National Guard*⁹ (GNR) that her daughter had gone to the grocery shop but never returned home, saying she was probably abducted. After Leonor Cipriano's appearance on television, telling the story of her missing daughter, she and her brother João Cipriano were subjected to several interrogations by the *Polícia Judiciária*¹⁰ and named official suspects, or *arguidos*¹¹, based on their confessions. They were accused of having murdered the girl, cut her body into pieces and disposed of it. However, there was no body, no crime weapon and no material evidence that her mother and uncle had actually committed the crime. The *Correio da Manhã* would say that the forensic

analysis of the house where supposedly the crime had been committed were fundamental for the investigation and conviction of the accused, namely because they had found blood on a freezer which indicated that those “*were the marks of a body of a eight-year-old girl chopped into pieces by her uncle and mother.*” (*Correio da Manhã*, 1 December 2005)¹² although the forensic analysis was not able to determine if any of the blood was even human.

The mother and uncle were submitted to a trial by jury which are quite rare in Portugal and only take place upon request by the Public Prosecution or the defendant, exclusively for crimes punishable by law with over eight years of imprisonment. Since Portuguese juries are not subjected to any form of isolation, this can pose as an advantage for the prosecution as the risk of a trial by the media and jury prejudice is potentially high, particularly whenever pre-trial publicity is pressured against the defendants.

Insofar as the defendants in the *Joana* case were individuals with very low social, cultural and economic resources, their chances of making a case for themselves in the media were rather diminished (Jewkes, 2004:52). In the trial itself, and according to the sentence transcription, the jury found them both guilty mainly based on indirect testimonies, character witnesses and, more importantly, a videotaped reconstitution of the crime by the girl’s uncle, made by the *Polícia Judiciária*. The video was made after long and numerous questionings without the presence of an attorney, where João Cipriano explained the circumstances of the supposed murder. The whereabouts of the body, or parts of it, were never found. The investigation coordinator, Gonçalo Amaral, and four other members of his team were investigated for accusations of beating and torturing the suspects. The coordinator of the team would later lead the investigations on the disappearance of Madeleine McCann.

The *Maddie* case concerns a British 3 year-old child that was reported missing in Portugal. In May 2007, a couple of British citizens (Kate and Gerry McCann) were on vacations in the Algarve in a resort in Praia da Luz called *Ocean Club* with their three children (Madeleine 3, Sean and Amelie 2 year-old twins). Initially, the media conveyed that the little girl had presumably been abducted from the room where she was sleeping with her siblings while her parents were having dinner in a restaurant inside the holiday complex. Along with the largest and most expensive police operation ever set up in Portugal to find a missing person, the weeks that followed Madeleine's disappearance would also trigger a massive international media interest.

The initial investigations by the Portuguese police and its scientific lab technicians were not able to find traces of Madeleine or a perpetrator. Meanwhile, a man that lived close to the *Ocean Club*, Robert Murat, was probed as a likely suspect and made an *arguido*, but no evidence of connection to the crime was ever found against him.

In late July 2007, there was a sudden turn of events as the British police brought in two trained dogs to detect odours of human tissue putrefaction and blood to perform a search in Robert Murat's house. However, the dogs would later signal human biological traces in the McCanns' holiday apartment as well as in their rented car. The traces were collected and sent to a British laboratory (the *Forensic Science Service* in Birmingham). On 7 September 2007, after an interrogation by the *Polícia Judiciária*, the *Ministério Público* (Public Prosecution) decided to make Madeleine McCann's parents *arguidos* on the grounds of suspected murder and concealment of the body. On the 9th of the same month, the couple and their other two children returned to England, stating their intention to keep on searching for their missing daughter. After their departure, the news

speculated about the possibility of arranging further interrogations as the police waited for the final reports on the traces sent to the *Forensic Science Service*.

On 7 January 2008, the *Correio da Manhã* announced that the final results of the exams pointed to a strong probability that the alleged blood that was found in the McCanns' apartment and car was indeed Madeleine's, but sources their suggested that the forensic evidence might not stand up in court. On 19 March 2008, after the McCanns threatened the media with defamation lawsuits, they were given a monetary compensations and public apologies by several British newspapers belonging to the *Express Newspapers* group.

On 21 July 2008 the inquiry on the case was finally closed by the *Ministério Público* due to lack of evidence of any crime being committed by the three suspects, Robert Murat, Gerald Patrick McCann and Kate Marie Healy.

6. Criminal cases and the tabloid press's images of forensic science

Media coverage of criminal issues is prone to sensationalistic treatment, especially in the tabloid or 'popular' press. The anonymity of the usual police sources contribute for the framing of the issues at the same time they lend credibility to the journalists who quote them. However, the media are not passive vehicles of their sources, official or not. The stories must be fitted and adapted for public consumption, which can often lead to excessive simplification and distortion (Ericson, 1998: 88; [Sacco, 1995: 146](#)). Eventually, when science becomes intertwined with criminal cases, journalists must balance accuracy of their reports with the need to be both attractive and comprehensible for the public (Holliman, 2004: 109). The Portuguese justice system, for the reasons mentioned above, unlike adversarial systems, is not quite suited for contests over

scientific credibility and deconstruction of scientific practices (Yearley, 1994: 252). Nonetheless, the press coverage of complex criminal cases where forensic science plays an important role provides some insights into public understandings of forensic science as the media acts as some sort of gatekeepers to the public (Conrad, 1999: 285; Zimmerman *et al.*, 2001: 37).

The strong effect

The *Joana* case and the way it was investigated marked an example on how the media evaluates and represents the scientific evidence in an investigative and judicial context. Based on the our *CSI effect* typification, we could say that initially there was a *strong accusation effect* due to the fact that the forensics team in the *Joana* case had found blood. The *Correio da Manhã* headlines the importance of this discovery and its immediate conclusions as: “*SEA OF BLOOD IN HOUSE POINTS TO MURDER*” (*Correio da Manhã* 28 October 2004).

We argue that this *effect* was probably sought by the investigators as the lack of material evidence to support the murder theory led to the leaking of prejudicial information about forensic evidence, which indicated that Joana had been murdered in her mother’s house. The investigator’s theory may have gained with the tabloid press’s representations of science and their authoritative certainty, expressed in the extract below by the use of reagents, which is a common procedure in *CSI* episodes.

The PJ [Polícia Judiciária] decided to search the whole house looking for traces of the child, resorting to the Laboratory of Scientific Police. Although the dwellings had been cleaned, the experts, through the use of reagents, managed to

detect blood traces on the floor, namely in a mark of some dimension, as well as in a mop. The PJ gathered these with other data that they already possessed and concluded: Joana was murdered by her mother and uncle. (Correio da Manhã 28 October 2004).

CSI imagery was used in the differentiation of the *Scientific Police* technicians from other police agents. Although in the following extract there are no direct references to *CSI*, we find the signalling of common objects and procedures portrayed in the TV series:

According to our sources, the elements of the Scientific Police, who wore white overalls and latex gloves, left nothing unexamined inside the small house. (Correio da Manhã 23 October 2004).

The reference to forensic experts emerges as the authoritative support (finding of blood through reagents, wearing latex gloves) for the investigator's non-scientific work ('other data'), although in practice nothing could be proven through the evidence collected, as the source of the blood could not be identified. The suspects' explanation was that the blood (and the use of petrol and bleach to clean it) was the result of a tick infestation.

Weak evidence, strong doubts

However, a *weak accusation effect* could be observed as science was unable to meet the expectations of a clean, irrefutable and infallible collection of evidence against the suspects, along with suspicions of police brutality, leaving a sense of doubt in the minds of many, such as the *Correio da Manhã's* editor, Manuel Catarino:

I'm convinced that Leonor and João Cipriano are guilty. But what the heck...Couldn't they have managed any tiny piece of evidence that would leave me with a clear conscience? (Correio da Manhã 12 November 2005).

The 'clear conscience' feeling is something which could be supported by beliefs DNA science's infallibility, neutrality, objectivity and truth ([Jasanoff, 2006](#); [Murphy, 2007](#)) or its fictionalised representations ([Cole and Dioso-Villa, 2007](#)) as a means to provide grounds for a psychological need for closure ([Tyler, 2006](#): 1064). It is common in *CSI* episodes that the suspect confesses the crime after being confronted with the evidence, bringing closure to the audience and suppressing the need of a trial.

Strong expectations towards forensic science

The Portuguese tabloid media's narratives surrounding the forensic evidence concerning the *Maddie* case was very identical to Joana's. It was punctuated by expressions such as "*fundamental*", "*precious*", "*crucial*", or "*the key to the crime*", contributing to a crescendo of dramatic tension that was aggravated by a perception of delay in knowing the results, which were expected to be presented very quickly.

The investigator's theory regarding the case against the McCanns reported in the press, that is, that they had been involved in her daughter's death and concealment of the body could only be supported by material evidence, namely the finding of the child's body or matching the bodily fluids found in her parents' car, rented 25 days after her disappearance.

As in the *Joana* case, there were deficiencies in the preservation of the alleged crime scene and a long period of time elapsed between the discovery of the crime and the collection of the evidence (from May to July 2007). In the *Joana* case the collection of evidence in the supposed scene of the crime may have happened more than ten days

after she was reported missing and the house remained inhabited by her stepfather and another man. In the *Maddie* case, the McCanns' holiday apartment was searched on the following day to the child's disappearance, but it wasn't until almost three months later, when the British trained dogs were brought in, that the minute specs of blood and bodily fluids were said to be detected in the apartment and rented car.

Perhaps due to the quality of the samples or the case's high media visibility and diplomatic sensitivity, it was decided that the samples would be sent to a British laboratory. The *Forensic Science Service* was then described as "*Europe's most sophisticated laboratory*" (*Correio da Manhã* 10 August 2007), or "*one of the most sophisticated in the world*" (*Correio da Manhã* 16 August 2007), as an implicit way of asserting the competence of the laboratory and the trustworthiness of the results they would eventually achieve. As a safeguard of the Portuguese scientific 'competence', the same newspaper states that a forensic molecular biology named *Low Copy Number* (LCN) is also possible to perform in Portugal, although admitting that there are contingencies in the use of the technique:

In Portugal England and the USA already apply the technique on a daily basis but the necessary logistics demands a large budget. In Portugal, the greatest difficulty relies on the lack of genetic databases and the inexistence of exclusively reserved areas to perform this type of analysis (Correio da Manhã 24 August 2007).

A sense of periphery concerning forensic science in Portugal regarding the UK configures a mix of confidence in the alleged greater capacity of English laboratories as well as some suspicion due to the fact that there were expectations that the results would be much quicker than they actually turned out to be. However, among these suspicions there were references to the "*complexity*" and "*sophistication of the analysis*" and the

“need to be certain”. The beliefs in the possibility to obtain quick results from minute size samples is illustrated by direct references to the *CSI* TV show, being the *Low Copy Number* technique described as being “popularized” by the series, using a form of translation (Hansen, 1994: 115; Kua *et al.*, 2004: 319) which could suit the public’s extent of comprehension without having to describe the whole scientific basis of the technique:

This technique, popularized by the ‘CSI’ television series, allows genetic identification from very small traces (...) The Low Copy Number technique came to enable the identification of individuals from trace amounts of latent fingerprints, left by the mere contact between the skin and paper, knives, pens, ropes, strings or weapons. The collection of these samples, invisible to the naked eye, is a powerful mean of forensic identification but its analysis is more complex than most. (Correio da Manhã 26 October 2007).

The *Low Copy Number* DNA profiling is a laboratory technique which is sensitive enough to analyse DNA profiling from just a few cells by raising the number of *Polymerase Chain Reaction* (PCR) amplification cycles. However, when this kind of analysis is done, special considerations must be attended in order to produce and interpret the results, such as the possibility of contamination from the crime scene or even from a laboratory source (Gill, 2001: 230). Some of the potential sources of contamination are investigative officers and other individuals at the crime scene, as well as laboratory staff, cross contamination from samples processed in the laboratory and plastic-ware contamination (Gill, 2001: 231). Furthermore, the *LCN* technique, for being so sensitive, is more prone to problems in the analysis and interpretation of samples, namely, the difficulty in identifying the type of cells in the sample, in drawing

conclusions regarding the transference and persistence of the sample, or if there was cell transference by casual contact (Gill, 2001: 232).

Despite the contingencies and uncertainties of the uses of *LCN* technique described in scientific literature, the images portrayed by the *Correio da Manhã* are mostly based in the assumption that it is a powerful mean for identification and its association with *CSI* carry an almost mystical notion of the possibilities of forensic genetics. In spite of forensic genetics' contingencies, DNA evidence is portrayed as a source of certainty and the authoritative support for the development of theories surrounding the death of the child, as statistical figures are overvalued, making them appear impressive:

Although they weren't completely conclusive (there is a 78.95% correspondence with Maddie's genetic profile concerning the blood traces found in the car used by the McCanns), the truth is that the probability of the girl's body or any of her clothes have been in the rented car after the disappearance has now increased. (Correio da Manhã 9 September 2007).

The claimed correspondence value of 78.95% for Madeleine's genetic profile is later amplified, as if it were used to consubstantiate an adversarial rhetoric in order to convince the jury (the audience) in a sort of 'trial by media', in which the *CSI effect* appears in a *strong accusation* version:

...it revealed an exact correspondence to Madeleine McCann's DNA" (Correio da Manhã 10 September 2007); "in the rented Renault Scenic there were blood traces compatible in almost 100% with the missing girl's. (Correio da Manhã 16 September 2007).

As soon as some forensic science results started leaking into the Portuguese media, the McCanns and their spokespersons immediately began working in the

deconstruction the supposed evidence, namely by invoking third-party experts to conduct analysis on the rented car and also by exploring errors in the investigation. In a highly mediatised case such as this one, it became important to generate some uncertainty concerning the leaked information, even if the case would never reach a trial. Unlike Joana's mother and uncle, the McCanns were both well-off, highly educated professionals, with connections inside the British government and media, who received substantial financial donations, thus affording the most expensive British and Portuguese lawyers. Hence, since the interrogations produced no 'confessions' like in the *Joana* case, the prosecution became completely dependent on the analysis' results from the British laboratory, as duly noted by the *Correio da Manhã* which stressed their importance:

In the absence of material evidence and confessions by the arguidos, the investigators are forced to rely on scientific evidence, the only ones that could actually defy the parents' theory. (Correio da Manhã 29 November 2007).

However, as time went by, the expectations and promises of certainty turned into somewhat disappointed discourses. Nevertheless, science's aura of infallibility remains untouched in face of the realization of the contingencies of science production in a forensic context.

Disappointment regarding the evidence in the *Maddie* case

The *LCN* technique, which was portrayed as being so sophisticated and sensitive that is even used in *CSI* (!)¹³, failed to deliver the long awaited dramatic climax. The reason for the failure in providing the expected certainty was said not to be due to limitations in the technique but rather to the degradation of the samples. The following

also extract refers to the decoding of ‘all’ DNA elements. This might imply that a perfect match was not possible due to degradation without mentioning the possibility that the DNA sample had come from another source or being mixed:

The samples, besides being microscopic, were very contaminated and not even the resort to the most modern technology allowed the decoding of every DNA element. (Correio da Manhã 4 November 2007).

The previous images of infallibility and certainty grounded on *CSI* imagery are transformed into the hard facts of real world. In this reality crime scenes are not immediately isolated and contained, the evidence is found almost three months after the reporting of the crime and the samples are contaminated, leading to a scenario where uncertainty and doubts over the probative value of scientific evidence is open to deconstruction.

When in January 2008 the final laboratory exams were spilled into the media, the speculation over the certainties provided by scientific methods turned into caution and hesitation in what appears to be the *weak accusation* variant of the *CSI effect*, due to the notion that the evidence may not be enough to prosecute:

For many detectives, the evidence appears to be enough, but the truth is that it may raise doubts in court. And in a case such as this one, where much of our authorities’ credibility is at stake, one cannot be overcautious. (Correio da Manhã 2 February 2008).

Both cases that we analyzed had in common the fact that an initial thesis of abduction grew into suspicions of homicide allegedly supported by scientific evidence. However, since no bodies were recovered, the matter of proving the homicide theories became quite difficult, even if in the *Joana* case the suspects were convicted.

7. Conclusion

Tabloid press's images of forensic science appear to be rooted on beliefs surrounding its decisiveness, objectivity and irrefutability of the evidence it produces by workings of a cultural context in which fictional portrayals of forensic science foster a sense of confidence that is carried into the 'popular' media discourse. As Dorothy Nelkin states:

Media interpretations are consequential. Beyond providing entertainment, the media serve as a form of pedagogy. Through popular narratives and repeated images, people learn how to deal with social dilemmas. (Nelkin, 1994: 29).

The popularity of recent television series like *CSI* in which laboratorial work and the production of scientific evidence are represented as the path for 'truth finding' (Podlas, 2006: 431; Tyler, 2006: 1067) appears in a general cultural context which could be associated with beliefs in the infinite potential of science and technology. The dissemination and multiplication of this sort of fiction series is likely to produce impacts in the public understandings of science, but also in the media's, insofar as they do not exist outside social reality. On the contrary, they are a part of it and participate in the construction and attribution of meaning (Ericson, 1991: 222), playing an important role in the modelling of their audiences' perceptions and representations (Guibentif *et al.*, 2002: 25).

The fusion between reality and fiction, that is generally associated with the criminal drama genre, may contribute to reinforce science's moral authority (Cavender and Deutsch, 2007: 71) and the symbolic submission of law to science (Santos, 2000). The characteristic time compression effect in televised fiction, as well as the uncontested display and association between science and truth raised expectations of a

climax that, in the image of fictional portrayals of forensic science, high-end technology, scientific methods and clever deduction manage to solve complex cases quickly and without error (Schweitzer and Saks, 2007: 358).

In the *Maddie* case it was possible to observe two variants of a *CSI effect* implicit in the tabloid press's narrative. The *strong accusation* rhetoric which celebrates the contribution and the importance of forensic genetics for the solving of crimes, which may assume almost reverential forms, is also accompanied in the *Maddie* case by explicit claims regarding the need to expand biosurveillance technologies¹⁴ by configuring new possibilities of genetic applications in criminal investigation, namely through the creation of DNA profiles databases (which exist in the UK since 1995 and that have only started to be implemented in Portugal in 2008).

Conversely, the *weak accusation* discourse exposes the contingencies and uncertainties regarding scientific evidence to the public, insofar as the promises of a quick and efficient solving of the case, *CSI* style, fail to perform in the real world. The Portuguese tabloid press framing in the *Maddie* case was shaped like a dramatic narrative that could well be mistaken with a *CSI* script plot. Thus, science is portrayed as the (only) solution for the crime as the dramatic tension grew due to media speculation and the absence of conventional explanations for the known facts.

The conclusion of the *Joana* case with the conviction of the two suspects even in the absence of material evidence of the crime and the closing of the inquiry on the *Maddie* case, doesn't cease to remind us that both children were never found and that their fate will most likely remain undisclosed. The uses and meanings of forensic science and particularly forensic molecular biology were given some prominence in the media coverage of these cases, making them useful examples to evaluate the messages conveyed by the media on the subject. The citizens' trust or mistrust regarding the

expansion of DNA profiles databases for forensic purposes and the shaping of the public understanding of science might be considerably shaped by the media's representations of forensic science in real contexts and not only in their idealized fictional portrayals.

In both *Joana* and the *Maddie* case, the media exposure of police suspicions and eventual evidence may have fostered some sort of trial by the media of the suspects, that is, prejudicial information susceptible of influencing public opinion or even a jury (Tyler, 2006: 1057). Although the public is not a passive consumer of media information (Guibentif *et al.* 2002; Sacco, 1995), much of the knowledge about the law and the judicial system, as well as representations about science, are likely to be apprehended through the media (Farr, 1993: 202; Hans and Dee, 1991: 140). Hence, the highlighting of forensic science in these cases and the over belief in forensic science's potential, associated to other elements of framing and construction of criminal drama, such as the *personification* of the individuals involved as if they were characters in a television series (Surette, 1998: 73) may have played a substantial role in the media characterization of the suspects as guilty, generating moral reactions in the form of public manifestations of indignation and disgust towards the suspects¹⁵.

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¹ According to 2007 newspaper circulation data, the *Correio da Manhã* was the national top circulating daily newspaper. Data retrieved from the Portuguese Association for the Control of Issuing and Circulation (Associação Portuguesa para o Controlo de Tiragem e Circulação), URL (consulted 5 May 2008) http://www.apct.pt/analisesimples_00.aspx?indice=4.1.

² *The Innocence Project*, URL(consulted 10 May 2008) <http://www.innocenceproject.org>.

³ These types of contingencies must not be understood as Portuguese local specificities, as they can be observed in several other countries, particularly regarding trial presentation and interpretation of scientific evidence (Nuffield, 2007: 72-4).

⁴ The 127th article of the Portuguese Penal Process Code states that other from the exceptions enforced by the law, the competent entity may value the evidence in accordance to the rules of experience and the their free conviction.

⁵ See, for example the *USA Today* article about the *CSI effect*, URL (consulted 15 May 2008) http://www.usatoday.com/news/nation/2004-08-05-csi-effect_x.htm.

⁶ In Portugal, *CSI Crime Scene Investigation* (or *CSI:Las Vegas*) and its spin-offs (*CSI: Miami* and *CSI: New York*) air on open television channel *SIC* and on the cable channel *AXN*. The 23 episodes of first season debuted on *SIC* in 29 July 2004 had average audience ratings of 5.7% and a share of 30.7% (Source: Markttest), URL (consulted 19 February 2009) <http://www.markttest.com/wap/a/n/id~665.aspx>.

⁷ The increasing demand for forensic science courses is claimed to be one of the of the *CSI effect*'s variants (Cole and Dioso-Villa, 2007: 451), A news article where it is claimed that the increasing offer of forensic courses is a way of universities capitalizing the genre's popularity: "Police chief criticises forensic courses". URL (consulted 20 February 2009) <http://news.bbc.co.uk/1/hi/wales/3307089.stm>. In Portugal there was also an increasing demand for forensic medicine courses attributed to the forensic science fiction genre.: "Série televisiva "CSI" faz aumentar inscrições nos cursos", URL (consulted 20 February 2009) <http://ww1.rtp.pt/noticias/index.php?article=275038&visual=26>.

⁸ A statistical report (2002-2008) published by the Portuguese agency for knowledge society (UMIC - <http://www.infosociety.gov.pt/>) states that 30% of population groups with primary education access the internet, in contrast with 90% for those with secondary education and 92% with higher education. Statistical tables available at URL (consulted 20 February 2009) http://www.unic.pt/images/stories/osic/II_Populacao_2008_final.xls.

⁹ The *Republican National Guard* (GNR) is a security force composed by military personnel which are organized in a special corps. They are entrusted with public security, maintenance of public order and the protection of private and public property in the Portuguese territory, mainly in the rural areas.

¹⁰ An investigation agency similar to the Criminal Investigations Department in many Commonwealth countries.

¹¹ According to article 57th of the Portuguese Penal Process Code, *arguido* is the status of the individual against who has been deduced a formal accusation or process of inquiry. Article 58th states that a person may be made an *arguido* based on grounded suspicions of crime. The *arguido* status of an individual is designed to provide a few rights, such as knowing the details of the charges or the right to remain silent during interrogations and to have a lawyer present at all times, and obligations that can go from a simple identity and residence statement to preventive prison, even if there is no formal accusation and an investigation is still under way.

¹² The authors are responsible for all extracts' translations.

¹³ Actually, we cannot confirm if the technique has been actually referred to during any episode of *CSI* or if it was just the journalist's manner of fitting an analogy in order to illustrate a cultural reference that many would recognize.

¹⁴ This subject has several references on news articles about the *Maddie* case in the *Correio da Manhã*'s editions of 3 June 2007, 24 August 2007 and 26 September 2009.

¹⁵ See, for example, the headline concerning the *Joana* case in the *Correio da Manhã* of 25 September 2004: "THIS MOTHER SHOULD BE KILLED". In the *Maddie* case, the *Correio da Manhã*, under the headline "MADELEINE MCCANN CASE – TRACES OF BLOOD DECISIVE – SUSPECTED OF KILLING AND HIDING MADDIE", where the *vox populi* makes comments regarding Kate McCann's lack of visible emotions as well as conjectures about the McCanns being drunk and accidentally killing their daughter.