

**Information Bulletin
for
Shoeprint/Toolmark
Examiners**

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The Information Bulletin for Shoeprint/Toolmark Examiners is published by the Marks Working Group of the European Network of Forensic Science Institutes (ENFSI).

<http://www.poliisi.fi/wgm/>

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Foreword

Dear readers,

One of the topics of this IBSTE issue is the preliminary program of the Marks WG for the 3rd EAFS meeting in Istanbul. In this EAFS meeting the Marks scientific sessions will include two workshops to be attended and a significant amount of presentations and posters on two days. It is remarkably more than in the two previous EAFS meetings.

The special meetings for SP/TM examiners have since their beginning been very popular among the mark examiners and the favour of them has obviously had an affect to this amount of presentations, as the special meeting is now arranged as a part of this 3rd EAFS meeting. One reason to the grown interest can also be the location of the meeting, the country and the city itself. Istanbul is historical, exotic and beautiful cultural city. The EAFS meeting is now only a few months ahead of us. It will be a good opportunity for all experts on marks field to meet not only colleagues of other countries but also experts on other forensic fields.

In this Bulletin you can also find the Annual Report 2002 of Marks WG to the ENFSI Board written by the MWG chair Dr. Horst Katterwe. As a continuum to the discussion of the conclusion scales - Bayes rule versus traditional approach - you can read H. Katterwe's letter on page 16. The work of the scale committee of MWG will continue. As an editor I would like to use also an opportunity here to ask you to send material to be published in the future issues of the IBSTE.

I wish you all a warm and nice summer!

Sincerely,

Anja Ytti

ANNUAL REPORT 2002 - ENFSI Marks Working Group



Marks WG

Dr.Horst Katterwe

Annual Report 2002

GENERAL

The Marks Working Group is one of the forensic science working groups of the European Network of Forensic Science Institutes (ENFSI). This working group covers examinations in a wide range of disciplines including tool marks, lock and key examinations, manufacturing marks, restoration of erased numbers, footwear marks, tyre marks, glove marks, bare feet and other related topics (but not fingerprint).

The general aims of the Marks Working Group are:

- To raise the level of expertise of marks examiners
- To promote best Quality Assurance practises in the fields of expertise covered by the Working Group.

These aims are to be achieved by:

- Ensuring that there is an interchange of information between examiners in different organisations through scientific meetings, personal contacts and a regular information bulletin.

- Promoting research covering the various types of examination conducted by members of the working group.
- Establishing good contacts between the Marks Working Group and other relevant groups (either other ENFSI working groups or external organisations such as IAI and AFTE).
- Considering collaborative exercises with a view to standardising the levels of conclusion reached in different organisations.

1. MEMBERSHIP

At the end of 2002 the Group had 42 full members and 119 guest members. The members represented 35 different countries.

As the work of marks examiners not only covers toolmarks and shoeprints but also a wide array of other types of examinations, the Group prefers to keep the guest membership „very open“, thus gaining benefit from the experiences of a big number of experts, especially during the so called SPTM conferences. Of course in a SPTM conference the „WG Business Meeting“ is incorporated but it doesn't take up too much of the time.

2. STEERING COMMITTEE

Chairman: Dr. Horst Katterwe
Bundeskriminalamt
e-mail: Horst.Katterwe@bka.bund.de

Members: John Birkett
Forensic Science Service
e-mail: jbi@fss.org.uk

Isaac Keereweer
Netherlands Forensic Institute
e-mail: i.keereweer@nfi.minjus.nl

Silvia Ramschl
Ministry of Interior
e-mail: Silvia.ramschl@bmi.gv.at

Gösta Strand
National Laboratory of Forensic Science
e-mail: fingerprint.marks@skl.police.se

Anja Ytti
National Bureau of Investigation
e-mail: anja.ytti@krp.poliisi.fi

3. TERMS OF REFERENCE

WG newsletter

Again, like in the four past years, several issues of the publication 'Information Bulletin for SP/TM Examiners' (IBSTE) were published (in 2002: 3 issues). At the end of 2002, the print of the Bulletin was about 250 copies which were delivered to 36 countries. The editor is Anja Ytti / Finland (see also: <http://www.poliisi.fi/wgm/>).

WG www site

Updating the information on the www site of the MWG has mainly involved adding the latest Information Bulletins and new requests for help on the Wanted Page. The WG www site is updated by Sirkka Mikkonen and Anja Ytti (both from Finland): <http://www.poliisi.fi/wgm/>.

Contacts to other WG'S

The ENFSI Marks WG has contact to other WGs:

- WG Quality and Competence Committee (Anja Ytti)
- Conclusion Scale Group "Firearm" (Horst Katterwe)

There are good contacts to the IAI (International Association of Identification) and to the AFTE (Association of Toolmark and Firearm Examiners).

4. AND 5. STATEMENT OF OBJECTIVES & PLAN INCL.

Achievements against plan (issues solved; outstanding issues)

Scale Committee

Both the comments by those who are in favour of the L.R. approach as well as the ideas of the more traditional „probability scale“, which are in favour of the „full Bayes‘ rule“ were discussed. Chairman Horst Katterwe had prepared a summary of the main objections for the use of „probability scales“ made by the FSS and the Lausanne University. In another paper Horst Katterwe has commented on these objections and reproaches (see IBSTE Vol. 8, No.1,2,3,2002). The main issues to be remembered from this discussion:

- most of the traditional mark examiners are already using Bayes‘ rule implicitly, without realising
- some of the mark examiners are using Bayes‘ rule explicitly. They are making conclusions, using a „probability“ wording, including an estimation of prior odds: based on the inherent assumption that no two tools, shoe soles are exactly alike. The population of the working surface of a tool, shoe sole is one (the premise (postulate) of the „one-sample-population“).
- Using default prior odds would also make it possible to transform a „probability scale“ into a „support“ (likelihood) scale and vice versa.
- The goal of the committee is to find a way to harmonise the conclusion scales, so that different examiners would draw the same conclusions when examining the same case and one would be able to compare the conclusions drawn in different labs in different countries even though they don‘t use the same wordings.

Christophe Champod‘s and Graham Jackson‘s letter in response of Horst Katterwe‘s point of view certainly was a breakthrough in the discussion. A compromise had been reached. As an aside: the differences between the ideas of traditionalists (the „Old

Europeans“) and Bayes‘ adepts aren‘t too big anyway. From this moment, the committee could go on with the „real work“.

It had already been discussed at the Wiesbaden meeting (March 2000) how many steps would be needed to differentiate between different levels of resemblance, without becoming too complicated to be handled by experts and laymen. A six-level scale got the support from all the members of the scale committee.

The committee believes that two „absolute“ conclusions are necessary: one positive and one negative („categorical conclusions“). One inconclusive level is added in between („possible yes / possible not“). Since, most of the time, it is easier to exclude an object as the possible source of a mark than to include it, it was decided to add one negative and two positive „non-absolute“ conclusion levels.

Six-Level-Conclusion-Scale of the ENFSI WG Marks

Level	Likelihood (partial Bayes‘ rule)	Probability (full Bayes‘ rule)
1	Identification	<i>Identification</i>
2	- Very strong support for proposition A - Strong support for proposition A	<i>Very probably</i>
3	Moderately strong support for proposition A	<i>Probably</i>
4	- Moderate support for proposition A - Limited support for proposition A - No support - Limited support for proposition \oplus (\oplus = Non A) - Moderate support for proposition \oplus	Non conclusive (possible yes / possible no)
5	- Moderately strong support for proposition \oplus - Strong support for proposition \oplus - Very strong support for proposition \oplus	<i>Probably not</i>
6	Elimination	<i>Elimination</i>

As each member gave his/her argumentation for each of the six levels, different points of view aroused. Isaac Keereweer from the Dutch NFI explained how shoeprint examiners evaluate acquired features on shoe outsoles in his country. The value given to the feature depends on its complexity and size, following strict guidelines. This system, which had already been presented at the Stockholm SPTM meeting 1999, has proved to be successful in the Netherlands to get a harmonisation of the conclusions being drawn. Some members of the committee criticised the system as being too strict and too severe, since a great number of very many acquired features are needed to conclude to „identification“. Besides these points of criticism, everyone agreed that this type of system is ideal to get everyone in line and that the principle to assign values to each acquired feature, depending on size and complexity, is a good one.

Automatic Comparison of Marks

The automatic comparison of marks is still a problem which must be solved to effectively support the toolmark examiner's work. Nowadays powerful tools in the field of image processing and pattern recognition in combination with increasing performance of the computer technology are available to achieve this aim.

At the request of the Forensic Science Institute of the Bundeskriminalamt (BKA) the Fraunhofer Institute for Production Systems and Design Technology (Fraunhofer IPK) in Berlin in co-operation with the Engineer's Office of Intelligence Technologies (INBITEC) also in Berlin carried out a feasibility study to test suitable analytical methods for computerized comparison of toolmarks.

For this purpose, toolmarks were produced under different conditions at the Forensic Science Institute Berlin. The surface profiles of the marks were measured with a laser surface scanner, with a 'MicroCad system' (three-dimensional imaging device based on the principle of structured light), and attained as gray value images by light microscopy photography, respectively.

A report of the first part of the project - a feasibility study - was given in Stockholm 1999, the second part was a development of a prototype applicable in forensic science examinations in the BKA Wiesbaden and in the PTU Berlin. The third part of the project "development of a commercial system for the use in European forensic labs" will be the next step: are there EU funds?

In addition to these methods the BKA asked the "Institut für Mess- und Regelungstechnik, Universität Karlsruhe/Germany" for co-operation in the field of image processing strategy. The Institute in Karlsruhe developed a new image processing method (enhanced image obtained by fusion methods) and a new image processing strategy that enables an automatic extraction of signatures from striation patterns.

Collaborative Exercises

The members of the Group would be very interested in participating in collaborative exercises. The main question is where to find resources to arrange such exercises.

For the moment shoeprint and toolmark proficiency tests are being arranged in the Netherlands for the police officers of the regional Crime Scene Units. It will be discussed in the Netherlands if the possibility exists of expanding these tests to an international level. The representative of the Dutch Forensic Laboratory will take this forward.

Also, the Forensic Science Service / UK is arranging collaborative exercises in footwear identification in the UK. The FSS representative offered to discuss in his organisation the possibility of extending these to other countries.

Certification program in Footwear Identification

The International Association for Identification (IAI) has established a Footwear Certification Program for shoeprint examiners. The only possibility to participate in the written part of the exam has been offered in the annual IAI Training Conferences which are held in the USA.

The Marks Working Group suggested to the IAI that it would be taken into consideration whether the MWG could be authorised to give the written exams for FW Certification in Europe. At the end of 1999, the proposal was accepted. At the EAFS 2000 meeting in Cracow the written part was offered for the first time and at the 4th SPTM-meeting in Berlin 2001 for the second time. Up to that time six European shoeprint examiners (from Sweden, Norway, Finland and Belgium) have been certified according to the requirements and testing set by the IAI Footwear Certification Board. There are two IAI-documents, which give a description of the Certification process: "Requirements for Footwear Certification and Application" and "Footwear Re-certification Policy and Procedures".

MEETINGS

STEERING COMMITTEE MEETING, LONDON, FEBR. 28 – MARCH 1, 2002

Agenda: Statute and representatives, IBSTE; WG website; Proceedings SPTM Berlin 2001; EAFS Istanbul 2003; SPTM 2004 or 2005 (Vienna or Vilnius); Contact to other WG's; EWGC meeting in Vantaa 2001; Projects, Membership in a project group; Annual report 2001 of the Marks WG; Next steering Committee Meeting in Vienna (Dec. 2002 or Jan. 2003).

CONCLUSION SCALE COMMITTEE, LONDON, MARCH 1-2, 2002

Agenda: Retrospective views: Stockholm 1999, Wiesbaden 2000, Cracow 2000, Brussels 2000; Berlin 2001: Panel Session „Range of Conclusions“; AFTE Newport Beach 2001: Bayesian or Non-Bayesian; Reproaches of some forensic scientists (FSS/UK, Univ. Lausanne) against the conclusion scale of the Marks Scale Committee: justified or fallacious?; German Marks Meeting, München 2001; A one-sample-causality-model and the whole Bayes' rule in mark cases; The six steps conclusion scale of the ENFSI Marks WG; Next Meeting in Vienna (Dec. 2002 or 2003).

FUTURE MEETINGS

1) EAFS 2003, Sept. 22-27 in Istanbul. The main subject is „Partnership Against Crime“.

2) SPTM 2005, May in Vilnius, Lithuania. The Vice-Rector of the Law University of Lithuania, Dr. Kurapka, wrote to the WG Marks Chairman: “I am glad that our Organisation will have the next Meeting SPTM 2005 in Vilnius“.

6. PLAN FOR THE NEXT YEARS (2003 – 2005)

(See enclosure Strategic Plan EWG Marks 2003-2005)

Strategic Goal	Objectives	Actions	Initiative	Time Frame
	(in order of priorities)	(in order of priorities/action	(Responsibility for action)	(Deadline to achieve)
Research & Development (New methods, Validation, etc.)	Conclusion scale including the full Bayes' rule Automatic comparison of marks	Meetings of the WG Marks Scale Committee Experimental studies in the BKA Wiesbaden, PTU Berlin	Chairman Dr. H. Katterwe Dr. H. Katterwe, BKA	2005 2005
Education & Training (Guidelines, Workshops, etc.)	Certification of mark examiners in different countries	IAI Certifications during SPTM conferences	A. Ytti, NBI Finland	
Quality Assurance (Manuals, Collaborative Ex.)	Collaborative exercises in shoeprint, toolmark cases QM-methods:marks	Tests in all ENFSI Institutes	A. Ytti, NBI Finland J. Birkett, FSS UK I. Keereweer, NFI Netherlands Accred. Labs	2005
Communication (Feedback, Newsletter, etc.)	www.site newsletter contacts to other WG's		S. Mikkonen, A. Ytti NBI Finland A. Ytti, NBI Finland, G. Volckeryck, Belgium Steering committee	
Funding				
Others (Databases, Joint/Combined Ex. with other Networks, etc.)				

HORST KATTERWE'S LETTER

Comment of the editor: This is the letter which Dr. Horst Katterwe, the chair of the MWG scale committee, has sent to Christophe Champod and Graham Jackson as an answer to their "Comments on the current Debate on the Bayesian Approach in Marks Examinations". Those comments were published in the last issue of the IBSTE Vol 8, No.3, December 2002.

09/04/2002

To:

**Christophe Champod
Forensic Science Service, Trident Court, Solihull Parkway,**

**Graham Jackson
Forensic Science Service, Washington Hall, Chorley, Lancashire**

Dear

Christophe and Graham,

Thank you very much for your comments (London, 28/02/02) concerning the current debate on the Bayesian approach in marks examinations. I and the members of the „ENFSI WG Marks Conclusion Scale Committee“ believe that the progress now made in relation to this subject – after many discussions in the „style of an open-minded dialogue“ – is important. In support of this view, I want to note that there can be no theories without theoreticians; no criticism without critics; no learning without learners, no science without scientists.

We do not differ on the process itself. Communication about beliefs typically takes place via the medium of language. And the word „probability“, or one of its synonyms, is widely used in discussions about uncertainty. In everyday conversation, the language in which we use „probability“ is typically rather informal and ambiguous. But for the purposes of scientific analysis and reporting this kind of response seems inadequate,

especially when we wish to communicate about „scientific uncertainty“. So, in my opinion, and I think, this is in agreement with you, the Bayesian framework is a useful medium for communication among the forensic scientists, even if „Bayesian thinking“ has also been considerably influenced by the philosophies of pragmatism and operationalism.

Nevertheless, any proposed procedure has to be used with caution regarding its attendant idealizations. But to ensure „coherence“ in the actions of the forensic scientists, we must lay down rules, or axioms, or frameworks: „knowledge-based expert systems“.

The Bayesian model („Bayesian paradigm“) – with different levels of creative approximations – seems to me to be essential for the analysis of uncertainty, regarding a closed set of specified possibilities, currently assumed to reflect key features of interest in problems under forensic science studies.

„I woke to find myself in a dark wood, where the right road was wholly lost and gone“ (Dante’s Divine Comedy). I believe, a Bayesian model – incorporating transparent estimations of both prior elements and likelihood elements – is a good framework „to find the right road in a dark wood“: the prior elements are revised, via the likelihood components of the Bayes’ theorem, into posterior elements. And the value of the posterior probability shall be the result of a forensic science examination!

For interpreting the results including writing conclusions in expert opinions a forensic examiner must deal with scientific theoretical ideas, including proposing mathematical models of the situation he is busy with, which shall represent the relationship, the correlation and/or the causality between important components.

However, all models are only approximations of the reality, described with estimations (here for the prior odds and for the likelihood ratio) and with specifications of the range

of validity. The „output“ must be acceptable for the „users“ (= the forensic experts) of this model. I think, the output „posterior odds“ with „probability steps“ is very well accepted by the marks examiners. These results are direct answers to the questions, being asked by the jury to the forensic scientists.

The applied model must be able to reflect an intertwined relation between theory and practice in a „logical run of experimental and theoretical events“, allowing modifications, so that it will agree with incoming new information.

At the end, I will repeat, that the progress, especially the working compromise now made in this discussion, is important. If the Judiciary allows the scientist to assign prior probabilities, then a conclusion scale using posterior terms such as probable, very probable is justified, useful, and necessary.

Best regards

Horst Katterwe

INFORMATION ABOUT THE 3rd EAFS MEETING

Anja Ytti



The most actual information about the 3rd EAFS meeting in Istanbul, Turkey, September 22-27, 2003 you can find on the web sites:

<http://www.eafs2003.org>

<http://www.enfsi.org>

The schedule for the program for the Marks Working Group at the meeting:

	Monday, 22nd	Tuesday, 23rd	Wednesday, 24th	Thursday, 25th	Friday, 26th
8.45 -12.00 a.m.	Marks WG Steering Committee Meeting			Marks Session I	Marks Session II
1.30 - 5.30 p.m.	Marks WG Business Meeting	Marks WG "Special Open Session" Workshop I and II		Poster Session/Marks	
9.00 a.m.-6.00 p.m.			Exhibits open	Exhibits open	Exhibits open

Preliminary program

Changes are possible

"Special Open Session", September 23rd

Workshop - Footwear Impression	Per Krat Denmark
Workshop - Barefoot Impression	Robert B. Kennedy Canada

Marks session I, Thursday, September 25th

09.00 - 09.20	Using the electrostatic Vacuum Box® for lifting two-dimensional (2D) dry origin footwear impressions	Hasan Bükür, Emniyet Genel Turkey
09.20 - 09.40	Pattern Recognition of Wear, Class and Identifying Characteristics in Footwear Impression Evidence	Hoosain M Ebrahim South Africa
09.40 - 10.00	Shoeprint Evidence processed by Digital Imaging	Curchod J., Lanzi L., Jallard R. Switzerland
10.00 - 10.20	Interpretation of Footwear Impression Evidence: An image processing approach	Thomas J. Hannigan, Liam M. Fleury Ireland
10.20 - 10.40	Break	
10.40 - 11.00	A Porcine Model for Ante Mortem and Post Mortem "Toe in and Sole Down" Footwear Impact Injuries	John Norman Canada
11.00 - 11.20	The Status of Barefoot Examinations in Europe	John Birkett England
11.20 - 11.40	The Identification of Crime Scene Barefoot Impression	Robert B. Kennedy Canada
11.40 - 12.00	Characteristics of footmark reflecting walking habit	Yao Li, Ma Yue, Li Ming China

11.00 - 15.00	Poster Session/Marks	
	Complex expert trace studies and imprints	Nadezhda Mailis Russia
	The criminal Investigation of Mark Dominations of Trucks and Buses	Russia
	A study which gives information about shoe prints examination with respect to criminalistics	Hüseyin Kara, Nevin Vural Turkey
	Footmark Analyzing	Ma Yue, Yao Li China
	A singular case: Black poplars never lie	Luciano Manuel Perez de la Lama, Antonio Martinez Abad Spain
	The new visualised version of the shoeprint data system in Finland	Sirkka Mikkonen Finland
	Marks observed on fragments of vehicle headlight panes. Use in forensic sciences	Claudia Girardet Switzerland

Marks session II, Friday, September 26th

08.45 - 09.05	Interactions of Spices with Plastics and the Restoration of Erased Numbers in Polymers	Horst Katterwe Germany
09.05 - 09.25	Duplication process of sidewinder keys: Traces left on the pattern key and elements of interpretation	Zanetta Sabina, Anthonioz Alexandre Switzerland
09.25 - 09.45	The individualisation of tool marks made by a chainsaw in wood	Kevan Walsh, Angus Newton New Zealand
09.45 - 10.05	Forensic Interpretation of the Course of the Event based on the Analysis of Traces revealed on Clothing	Andrzej Chochól, Jolanta W-G Poland
10.05 - 10.25	Break	
10.25 - 10.45	Polish Methods of Earprint Identification	Jerzy Kasprzak Poland
10.45 - 11.05	An interesting and peculiar microscopic characteristic on broken automobile indicator lamp	Ramakrishnan Pookalangara Narayan, C N Bhattacharyya India
11.05 - 11.25	Laser Profilometry: the missing link in the examination of polyethylene bags	Veerle Berx, Jan De Kinder, Belgium
11.25 - 11.45		

OTHER UPCOMING CONFERENCES

IAI Annual Educational Conference
(International Association for Identification)
July 6-11, 2003
Ottawa, ON, Canada
www.theiai.org

IABPA Annual Training Conference
(International Association of Bloodstain Pattern Analysts)
October 8-10, 2003
Odessa, Texas
www.iabpa.org

THE RENEWED ENFSI MARKS WG's WEB SITE

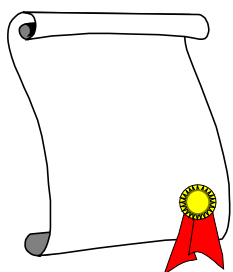
Sirkka Mikkonen, Anja Ytti

Dear readers, we hope that you have already found that the ENFSI Marks Working Group's web site has been renewed some weeks ago. The main purpose for the changes was mainly to renew the layout. The contents of the web site is basically the same as before with the library of collected articles, the references to SPTM and EAFS meetings and future meetings, Wanted page, the IBSTE issues etc.

The address of the web site has remain the same, it is: <http://www.poliisi.fi/wgm>

You can also send your requests to be added on the Wanted page to the same email address as before: wanted@krp.poliisi.fi

The IAI FOOTWEAR/TIRETRACK CERTIFICATION TEST



At the 3rd EAFS meeting in Istanbul there will be arranged a chance to take the theory part of the IAI Footwear/Tiretrack certification test. The certification test consists basically of two parts - the theory part and the practical part. The certification is valid for five years.

The test has this far been arranged two times at the European meetings. The first time the test was arranged in Cracow at the 2nd EAFS meeting, 2000 and the second time it was arranged at the 4th SPTM Meeting in Berlin, 2001. Six European footwear examiners have completed all requirements and testing as set forth by the IAI Footwear Certification Board: one from Sweden, one from Norway, one from Finland and three from Belgium.

If you are interested in taking the IAI FW/TT Certification test at the EAFS meeting in Istanbul you can find information about the test on the IAI web site <http://www.theiai.org/certifications>.

There is all necessary information about the educational requirements, the experience and training requirements and the procedure itself. You will find there also the current fee, the application forms, the mention about the endorsement letters etc. etc.

The deadline for sending the application form and the fee for testing is the 31st of July.

The application form and other included material should be sent to William Jungbluth.

Contact address:

William O. Jungbluth

The secretary of the IAI FW/TT Certification Board

360 McKenzie Drive

Stockbridge, GA 30281-6702

USA

Email: william.o.jungbluth@us.army.mil

You will find his name and address also on the web site. Please, notice that the fee has to be paid before taking the theory part of the test and it is non-refundable.

You are asked to inform also me, Anja Ytti, about sending your application form to William Jungbluth. The reason for that is that I have to know if there exist applicants for the certification test because I have to arrange all practical things for the test there in Istanbul, for example reserve a suitable room and fit the time of the test to the other program.

Contact address:

Anja Ytti

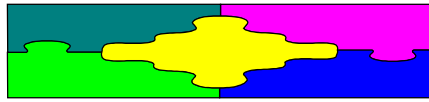
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