

## Part I

# Fibre Transfer & Distribution

**Kornelia Nehse – LKA Berlin**

# Fibre Contact Traces - Distribution and Persistence



## Clothes - a Second Skin

# Fibre Transfer

**Fibres are easily transferred from one location to another and are present in form of microscopic debris on different surfaces.**



SWG MAT

Courtesy of SWG Fibers Group

# Locard's Exchange Principle

**“When two or more bodies or  
items interact  
they contaminate each other  
with extremely small fragments  
of the substance”**

Courtesy of SWG Fibers Group

# Locard's Exchange Principle



Courtesy of SWG Fibers Group

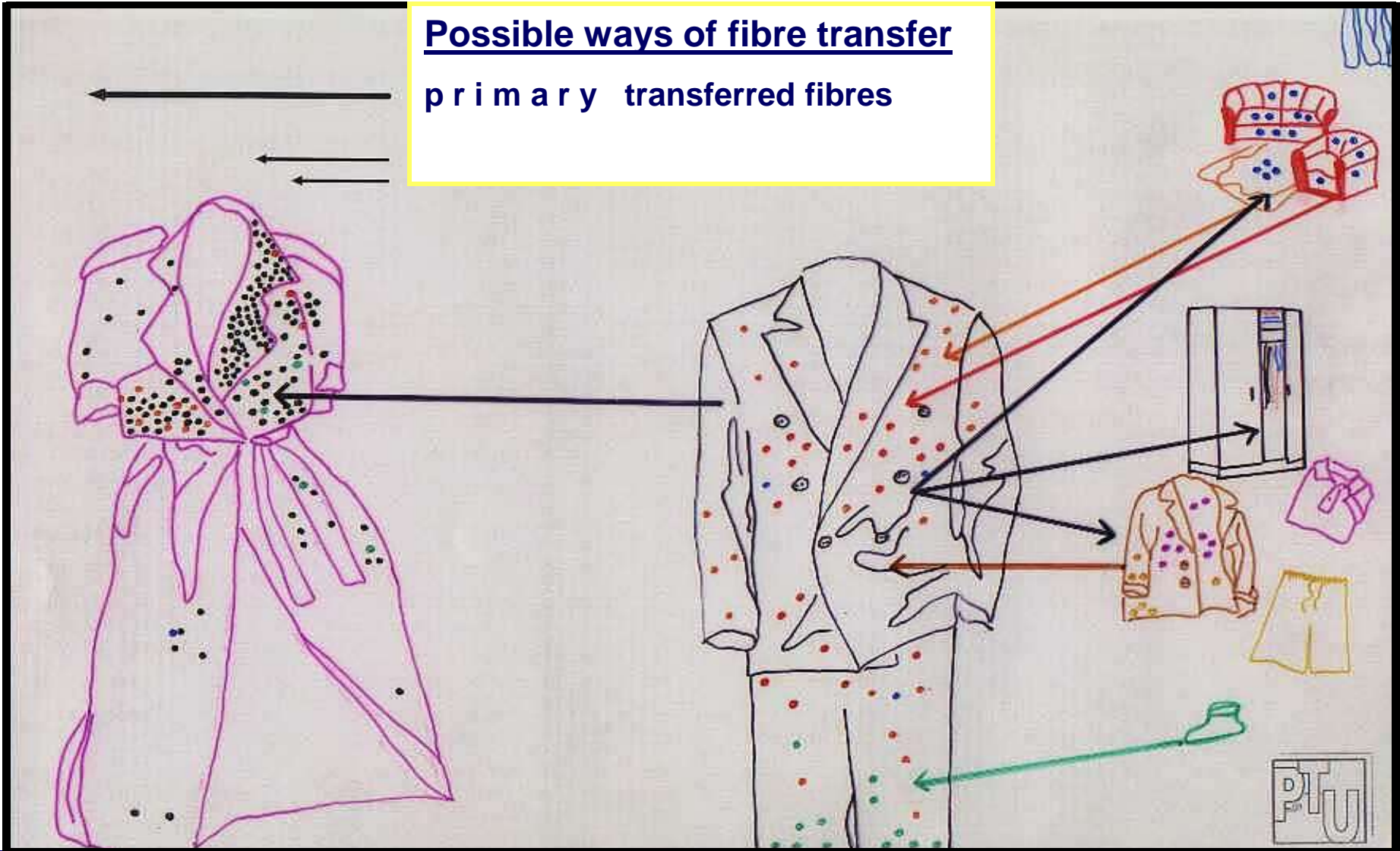
## Possible ways of fibre transfer

- **p r i m a r y** transferred fibres  
fibres of textile donors are transferred to another item in a direct contact

# Fibre Contact Traces - Distribution and Persistence

## Possible ways of fibre transfer

primary transferred fibres





# Possible ways of fibre transfer

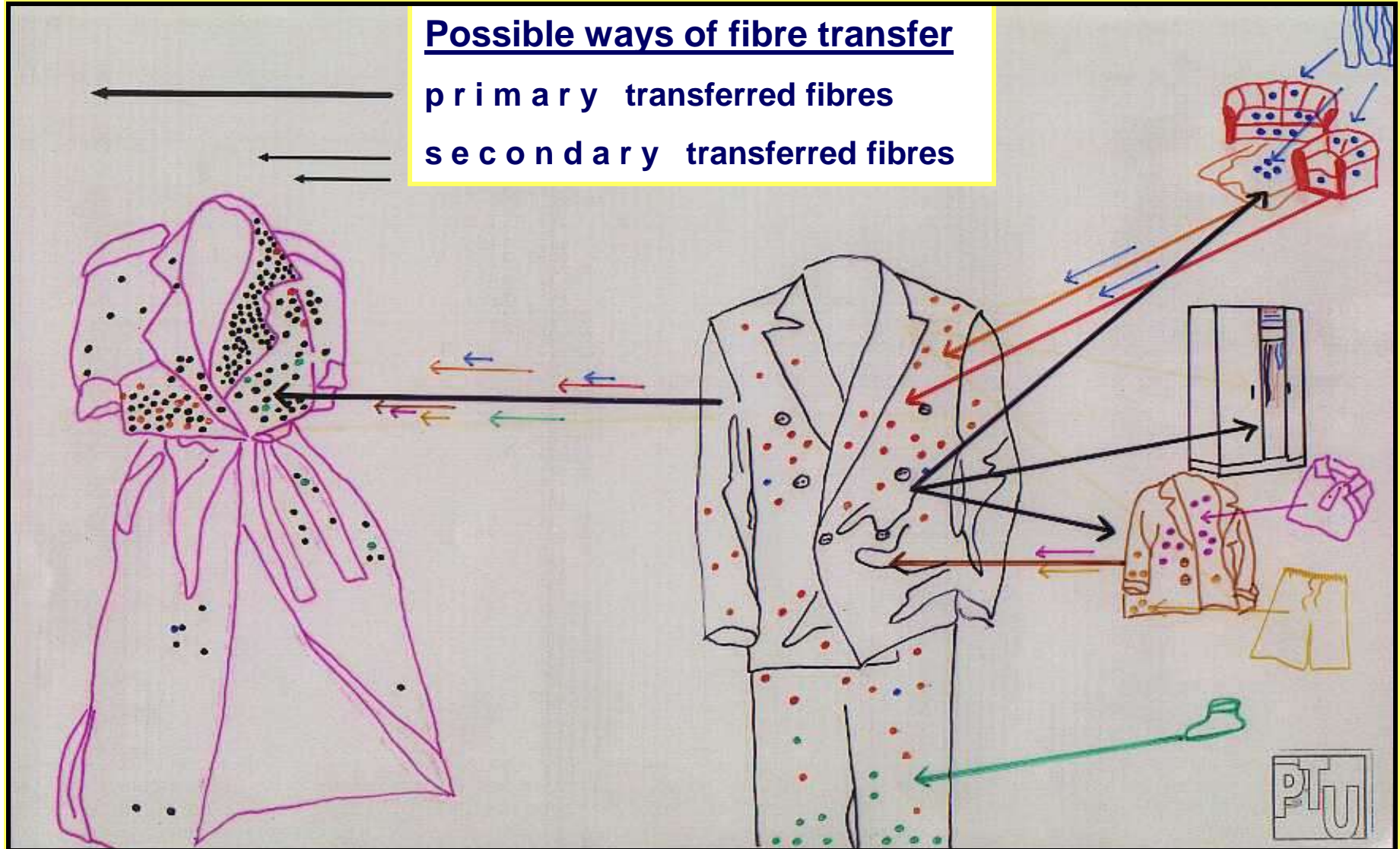
- **p r i m a r y** transferred fibres

fibres of textile donors are transferred to another item  
in a direct contact

- **s e c o n d a r y** transferred fibres

fibres from the surface of a textile donor are  
transferred together with primary fibres

# Fibre Contact Traces - Distribution and Persistence



# Fibre Distribution

## Influenced by

- 1. Method of evidence collection**
- 2. Processing of evidence**

- **Method of evidence collection**

e.g.

- **Picking**

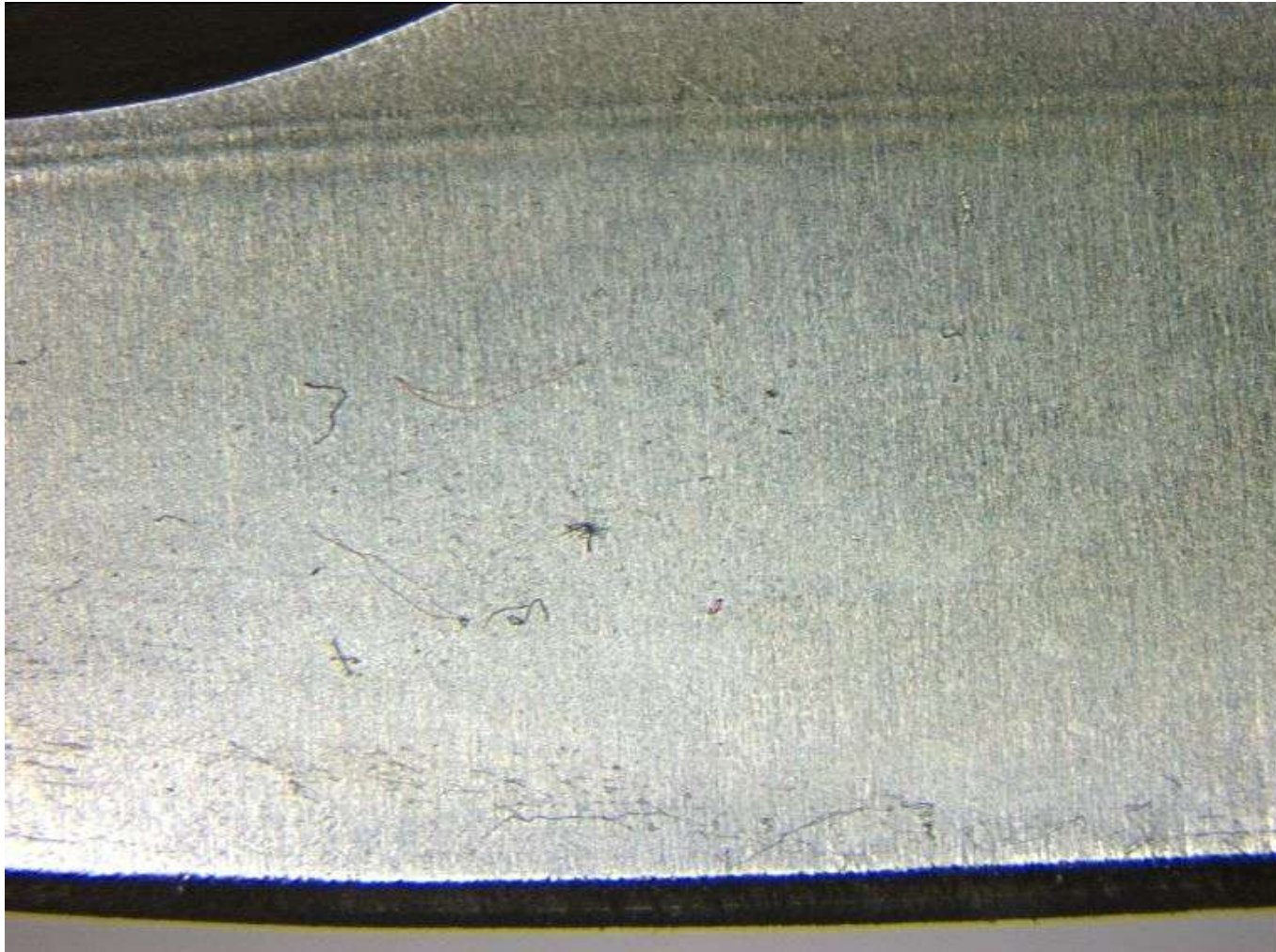
# Fibre Contact Traces - Distribution and Persistence



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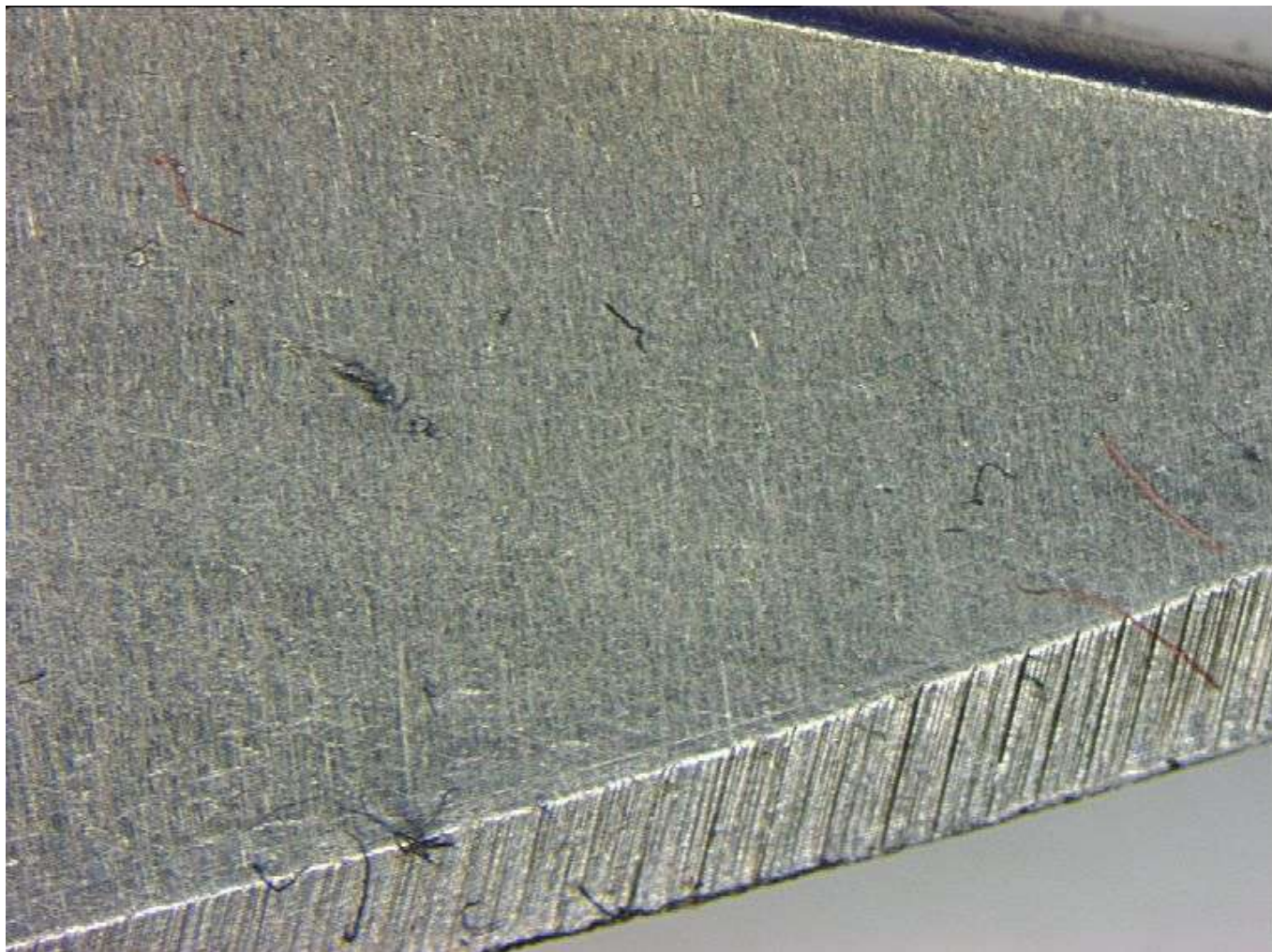


# Fibre Contact Traces - Distribution and Persistence





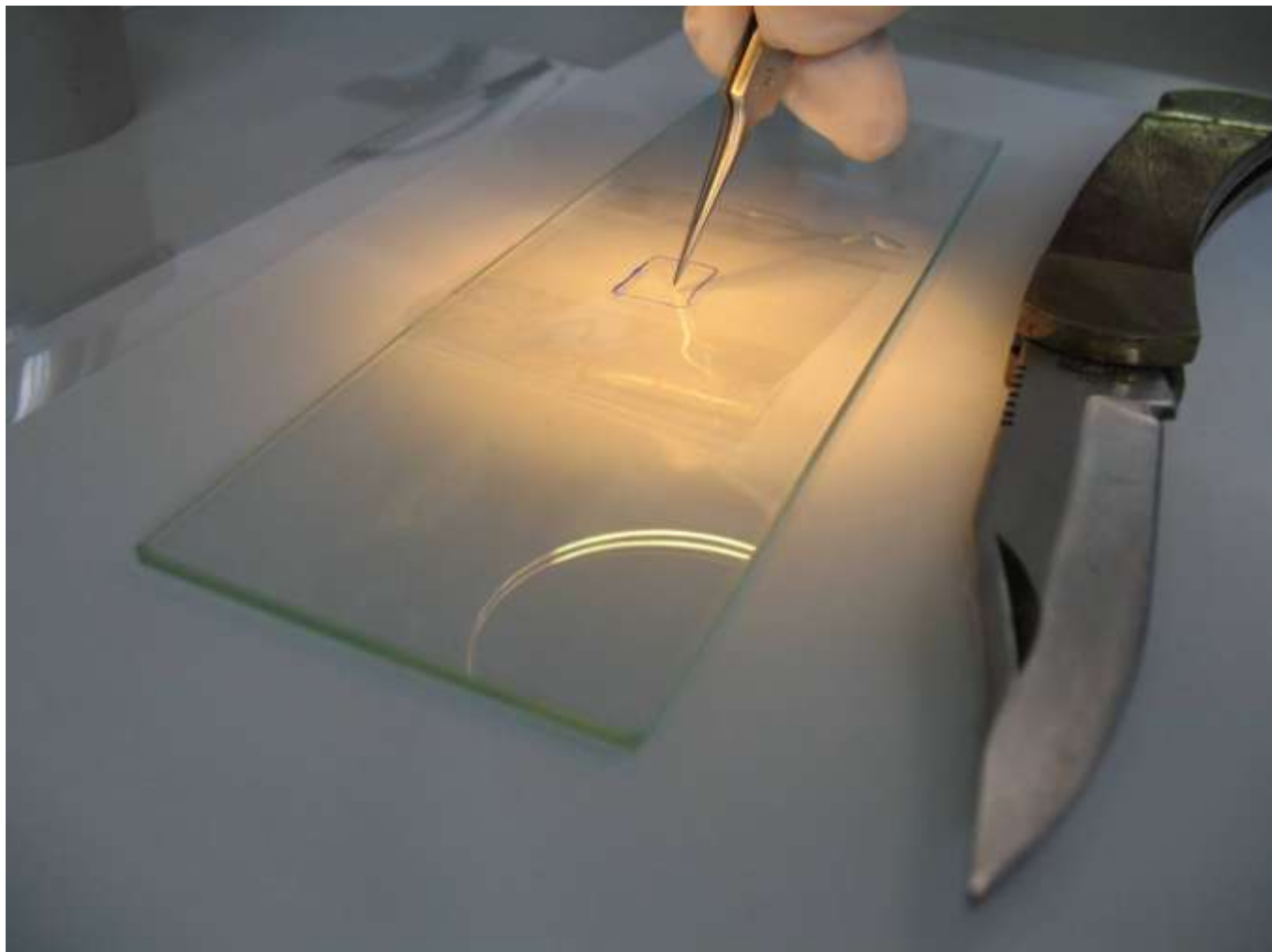
# Fibre Contact Traces - Distribution and Persistence



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# Fibre Contact Traces - Distribution and Persistence



- **Method of evidence collection**

e.g.

- Picking

- Tape Lifting

## Tape Lifting

- **type of tape**

  - Scotch Book Tape** (No. 845 or 800, 50.8 mm)

  - Police Tape** (Polizei ..., 25 mm)

- **technique of taping**

  - additive/zonal taping or 1 : 1 taping**

## Tape Lifting - Material



Closed  
Tape Device

Scotch Book Tape

Plastic Grip Bags



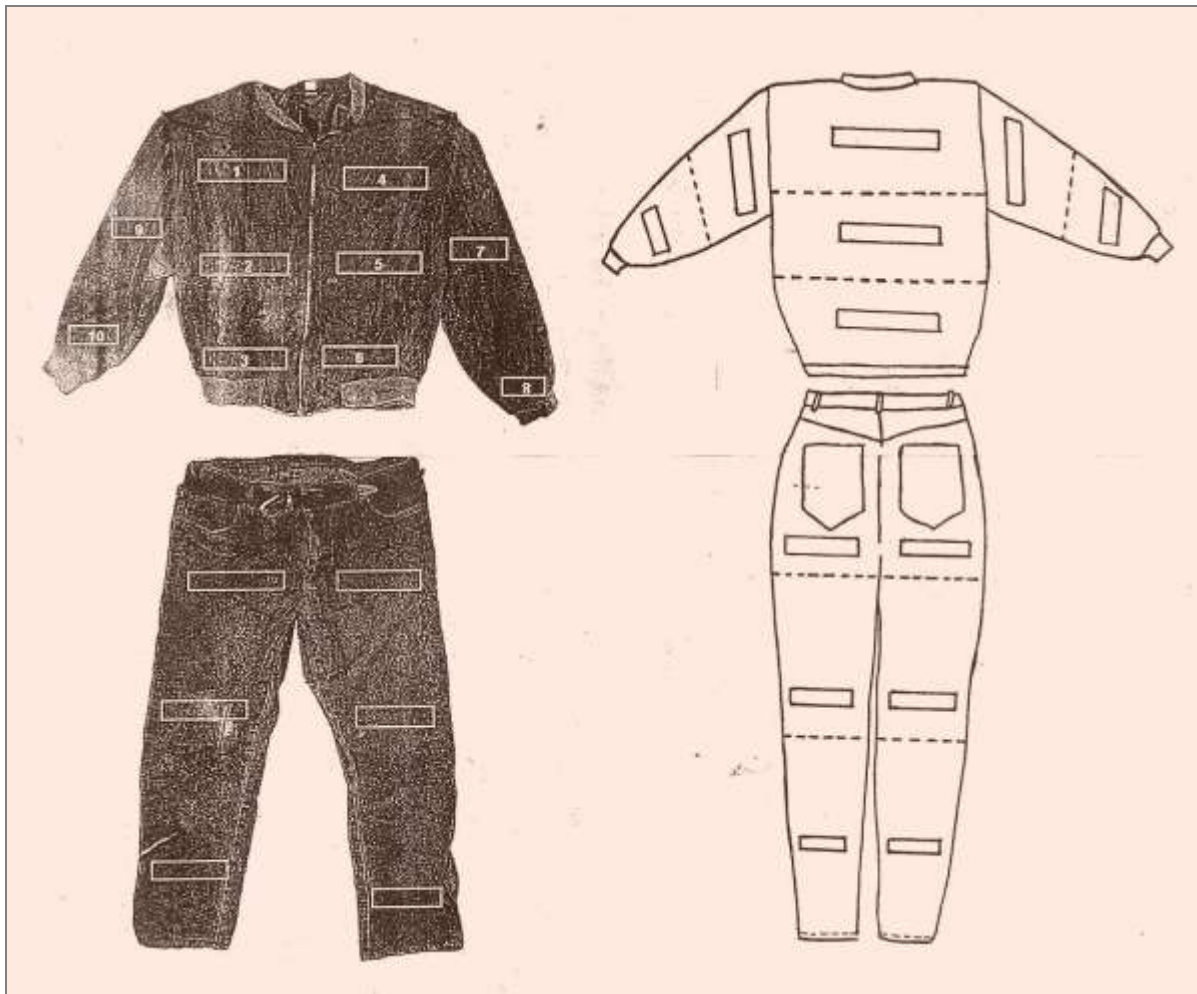
## Tape Lifting - Material



„Polizei“ – Tape



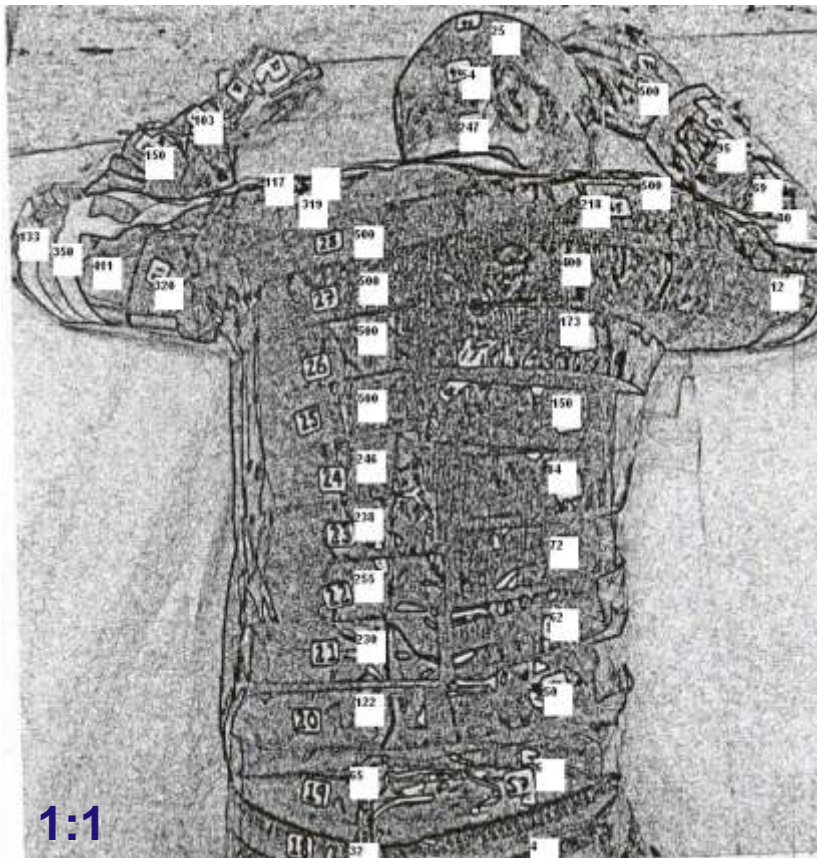
# Fibre Contact Traces - Distribution and Persistence



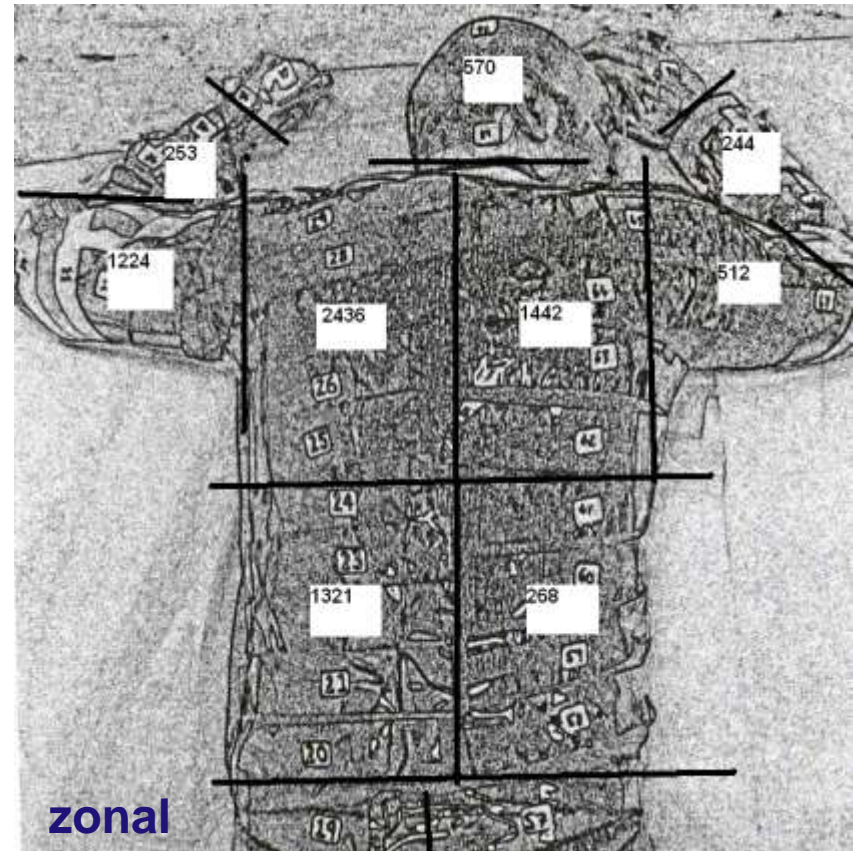
**Additive/  
Zonal  
Method**

# Fibre Contact Traces - Distribution and Persistence

## 1 : 1 method



## additive method



Courtesy of Ray Palmer - FSS

## Tape Lifting – 1:1



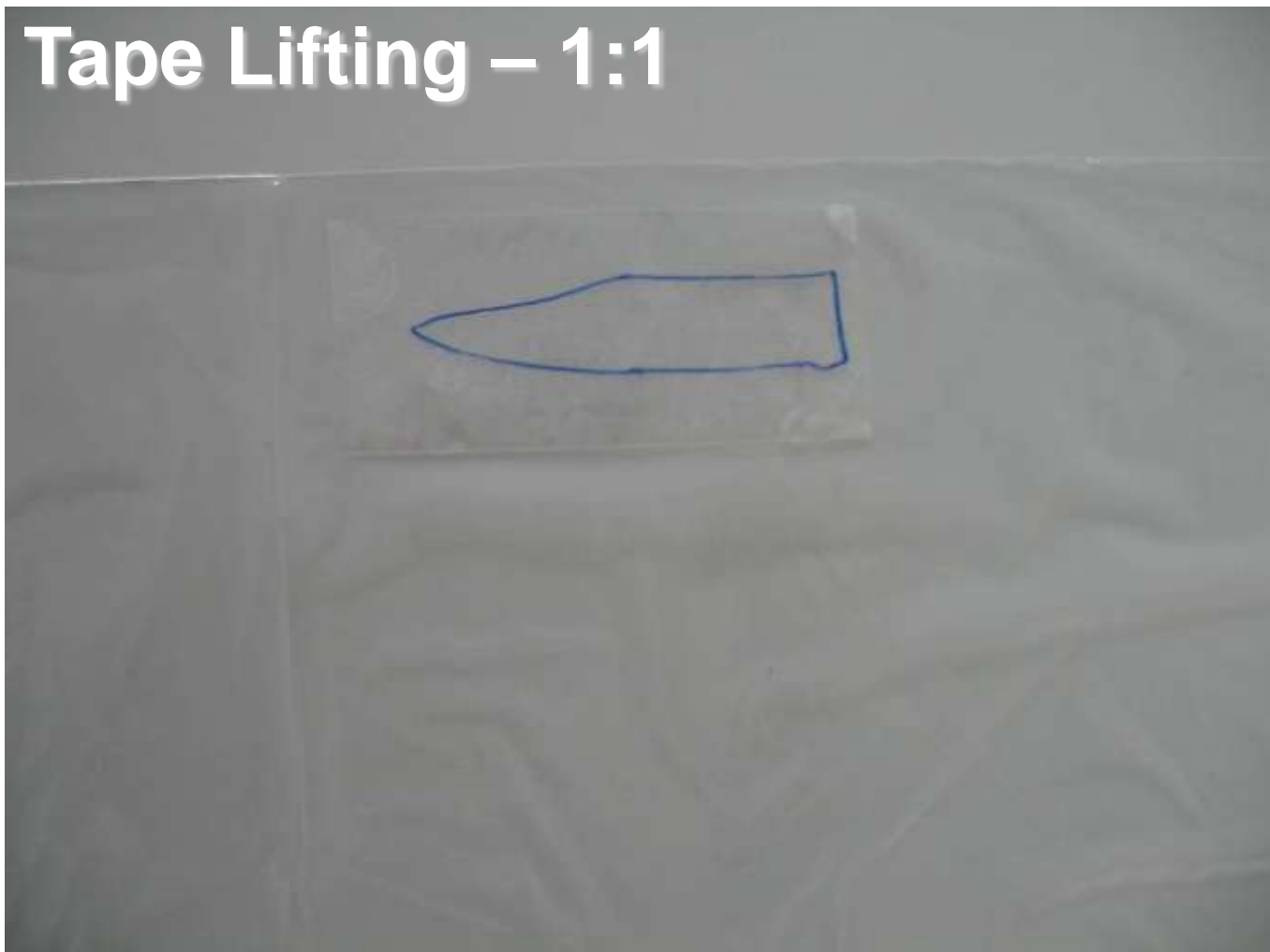
## Tape Lifting – 1:1



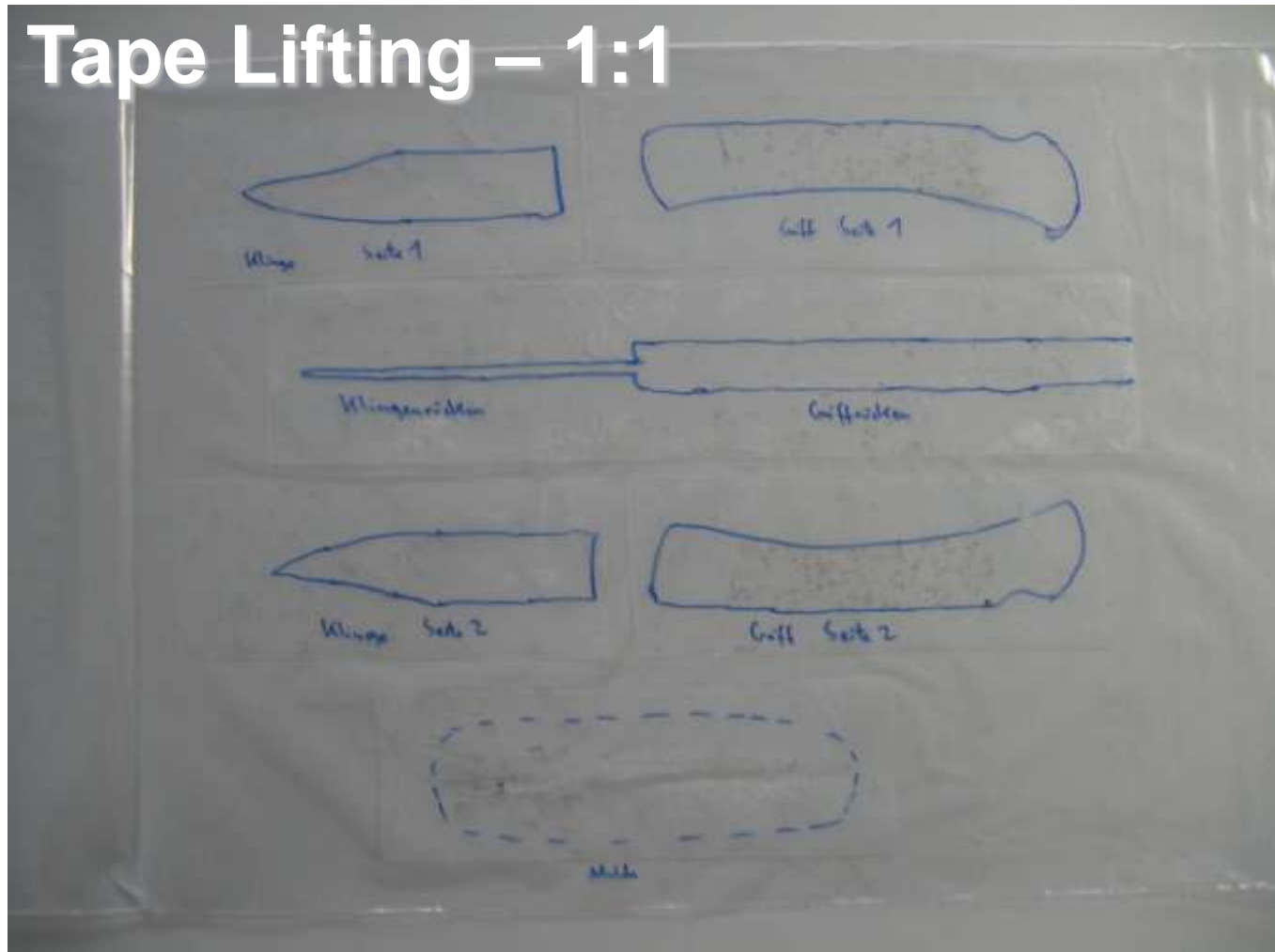
## Tape Lifting – 1:1



## Tape Lifting – 1:1



## Tape Lifting – 1:1



# Fibre Contact Traces - Distribution and Persistence

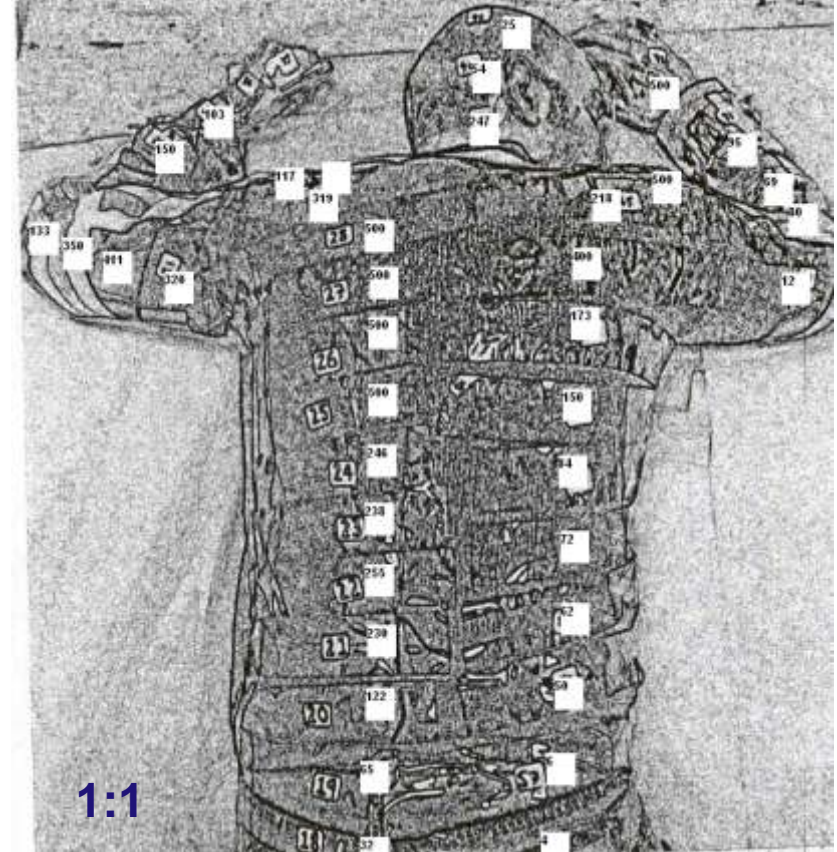
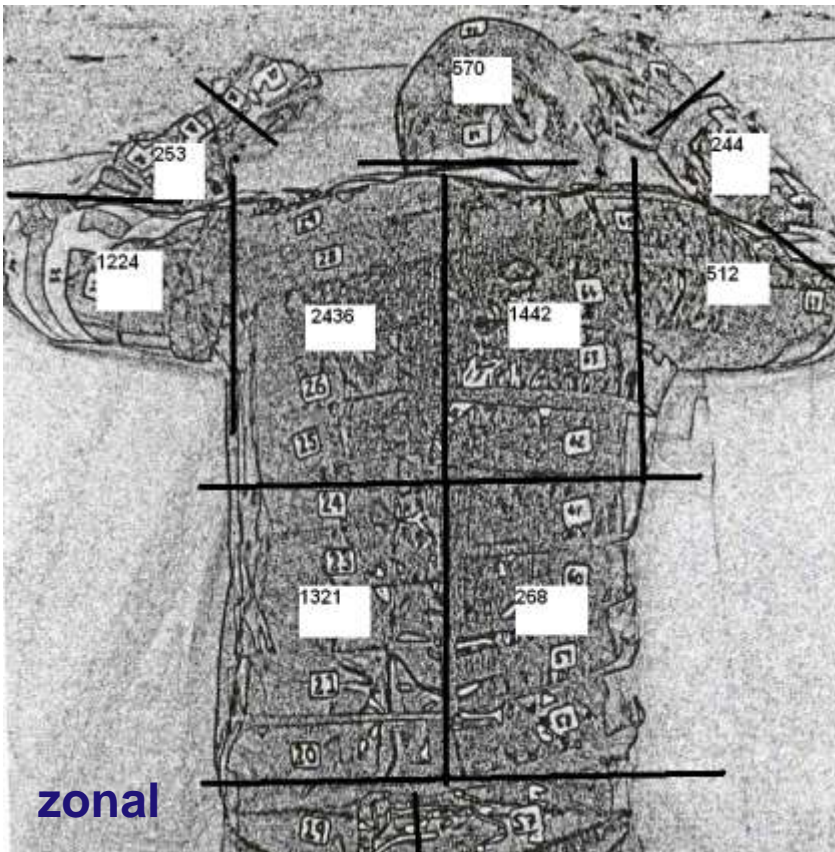


Courtesy of Ray Palmer - FSS



## additive method

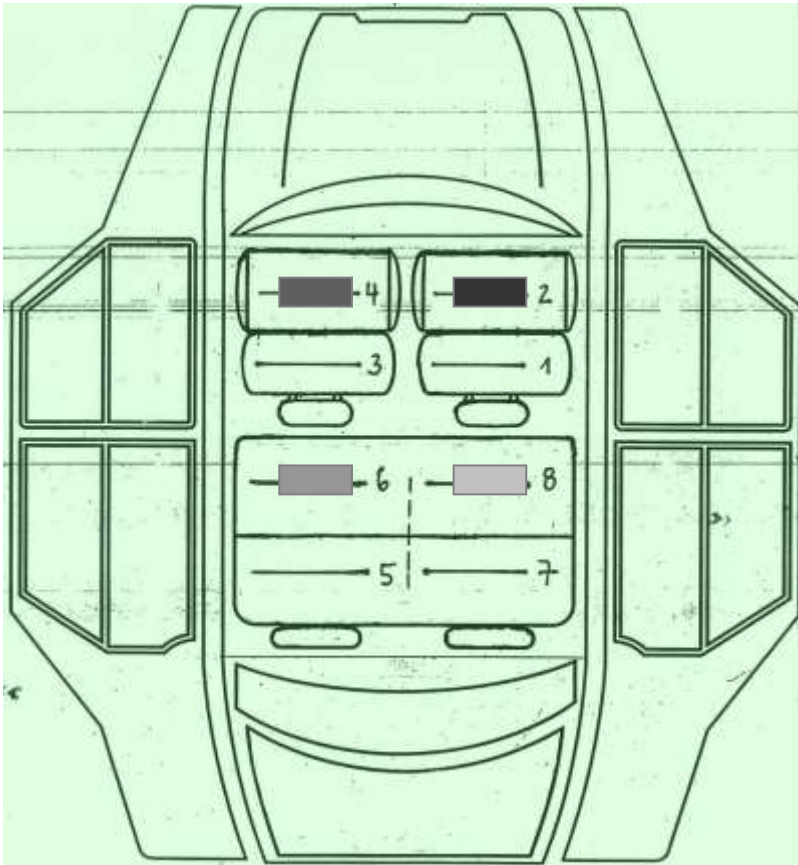
## 1 : 1 method



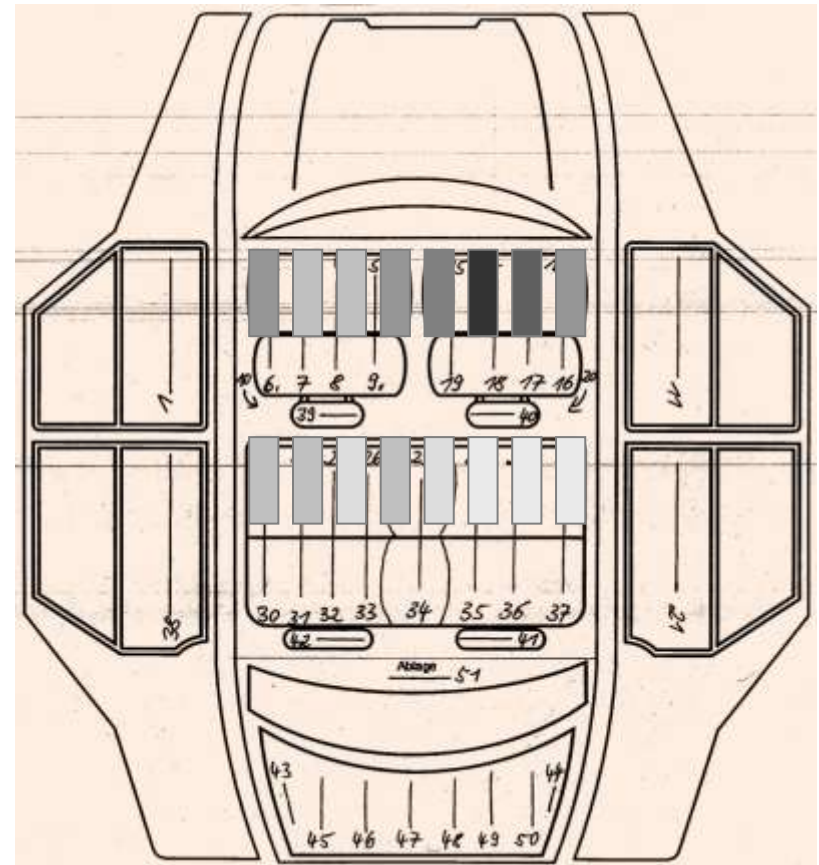
Courtesy of Ray Palmer - FSS

# Fibre Contact Traces - Distribution and Persistence

car: 8 tape lifts



car: 51 tape lifts



## Mapping



## 2. Processing of evidence

- **The Black Hole**  
**From Crime Scene to Laboratory**
  - **Where, when and by whom was the item collected on the scene**
  - **How and by whom was the item packaged and protected**
  - **Was protective clothing worn**
  - **Was the victim moved**

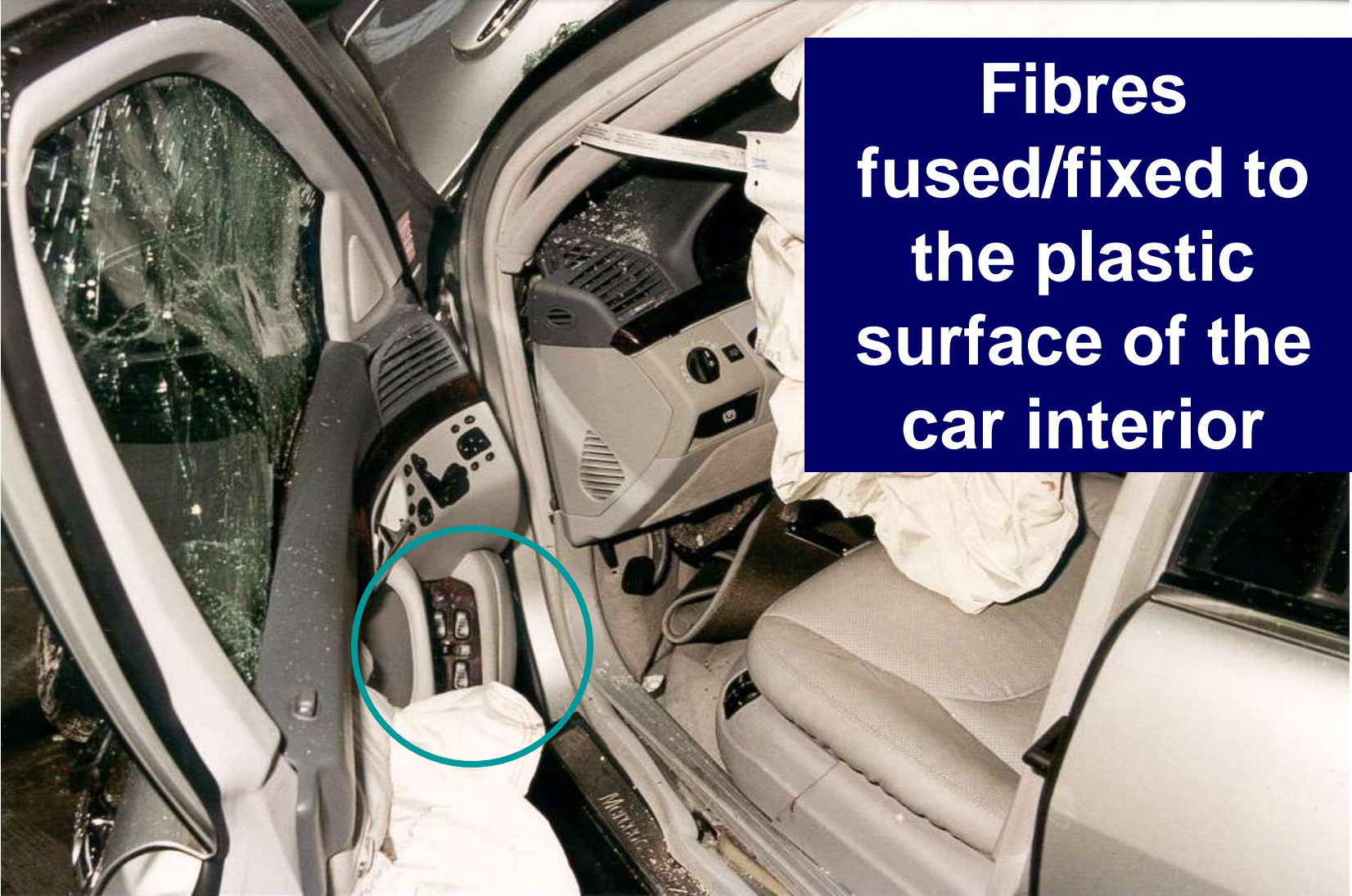
# Fibre Contact Traces - Distribution and Persistence



**Collected  
on the  
scene**

# Fibre evidence in case work

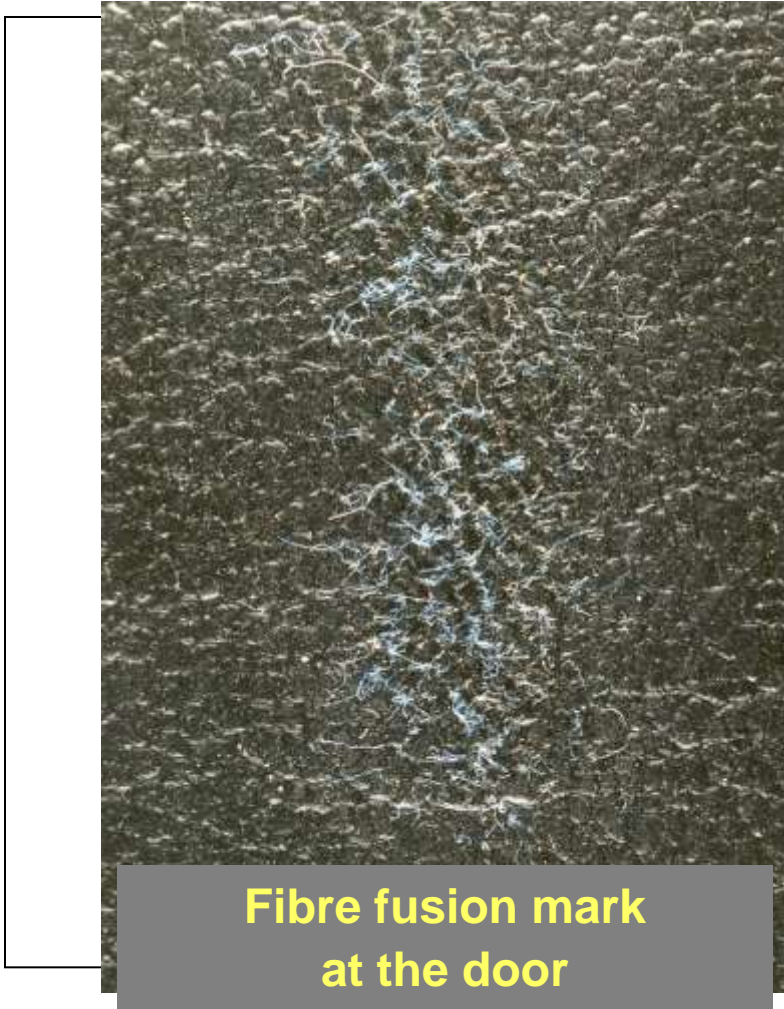
## Fibre Contact Traces - Distribution and Persistence



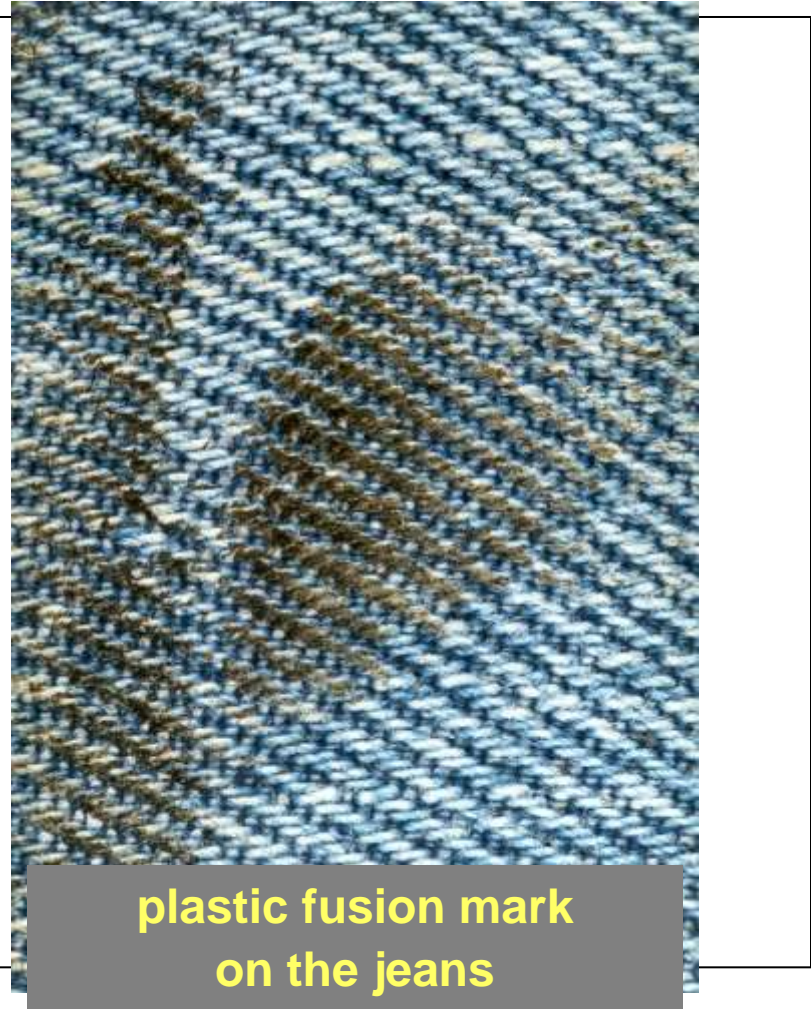
**Fibres  
fused/fixd to  
the plastic  
surface of the  
car interior**

# Fibre evidence in case work

## Fibre Contact Traces - Distribution and Persistence



**Fibre fusion mark  
at the door**



**plastic fusion mark  
on the jeans**

Courtesy of the BKA

## 2. Processing of evidence

- **Laboratory**
  - **Designated processing areas**
  - **Each area is cleaned prior to use**
  - **Items originating from victim, suspect, and crime scene need to be processed in different rooms by different people to avoid contamination**
  - **Protective clothing**



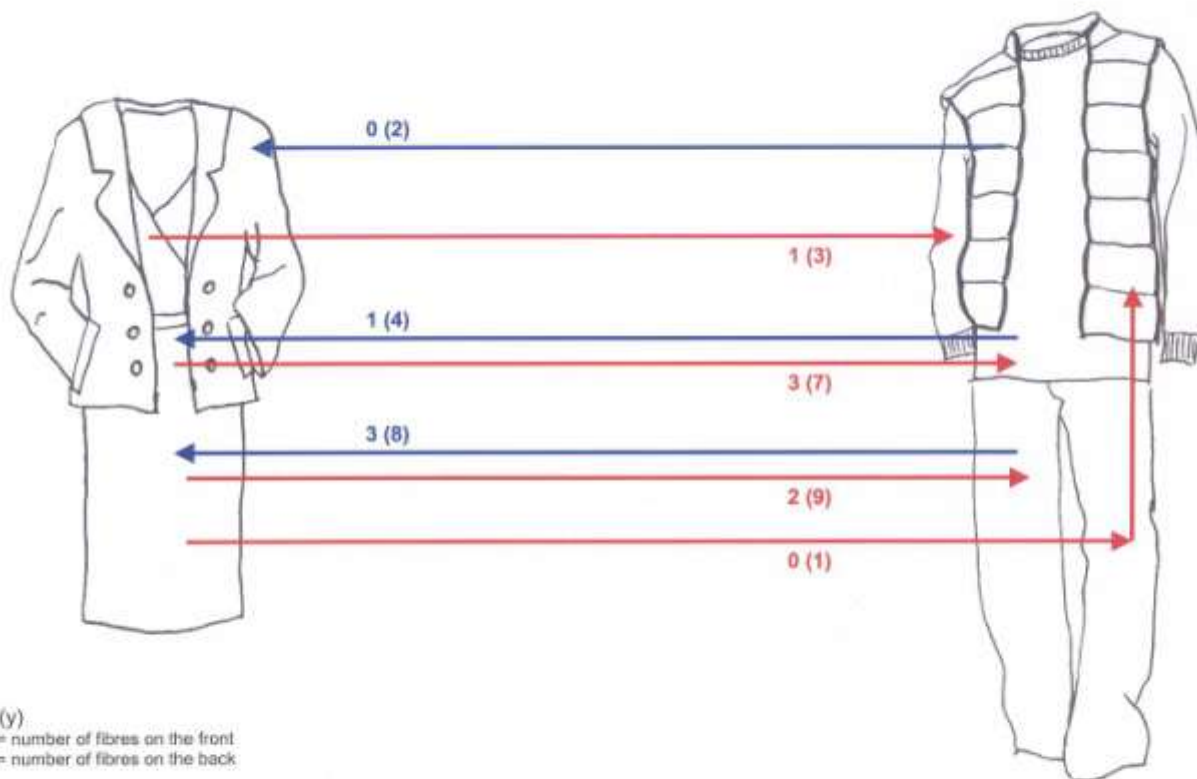
# Fibre Contact Traces - Distribution and Persistence

Lab  
conditions



# Fibre Contact Traces - Distribution and Persistence

## Fibre transfer

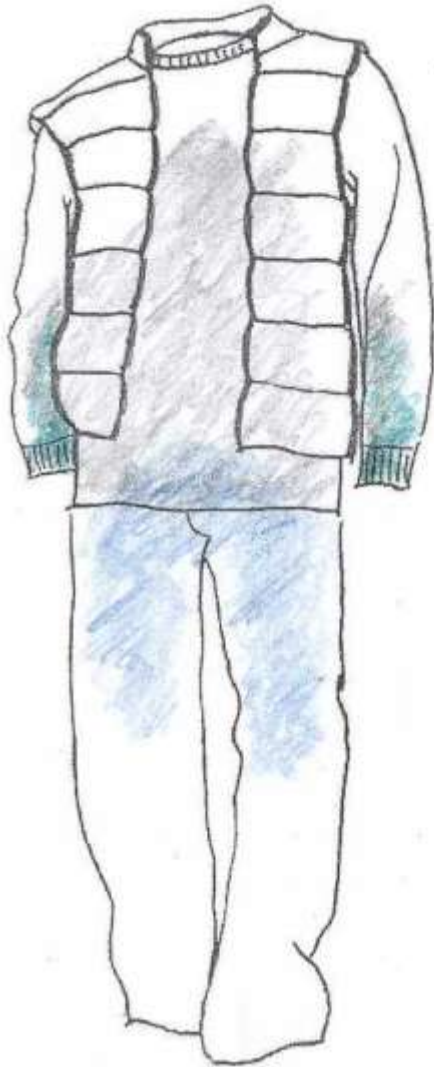


## Example

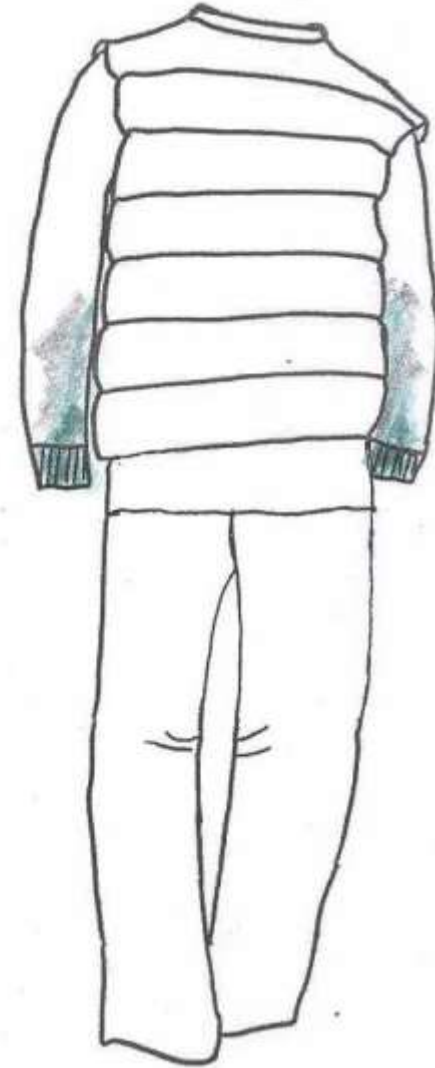
**The victim was attacked by an offender from behind**



# Fibre Contact Traces - Distribution and Persistence

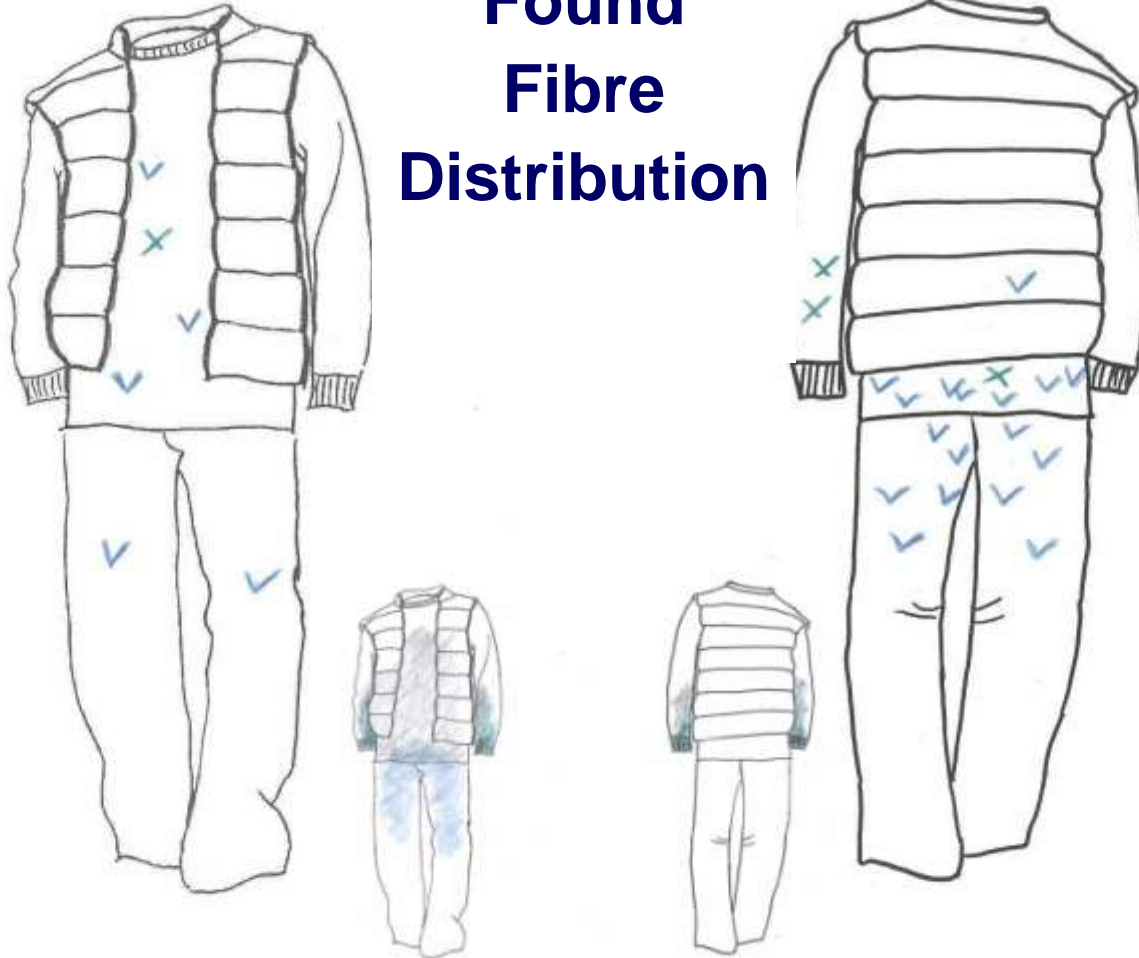


**Expected  
Fibre  
Distribution**



# Fibre Contact Traces - Distribution and Persistence

## Found Fibre Distribution

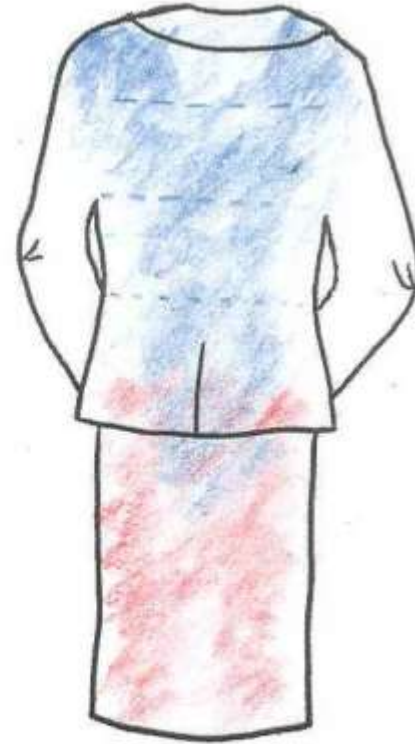


Victim's fibres on suspects clothes

# Fibre Contact Traces - Distribution and Persistence



**Expected  
Fibre  
Distribution**



# Fibre Contact Traces - Distribution and Persistence

## Found Fibre Distribution

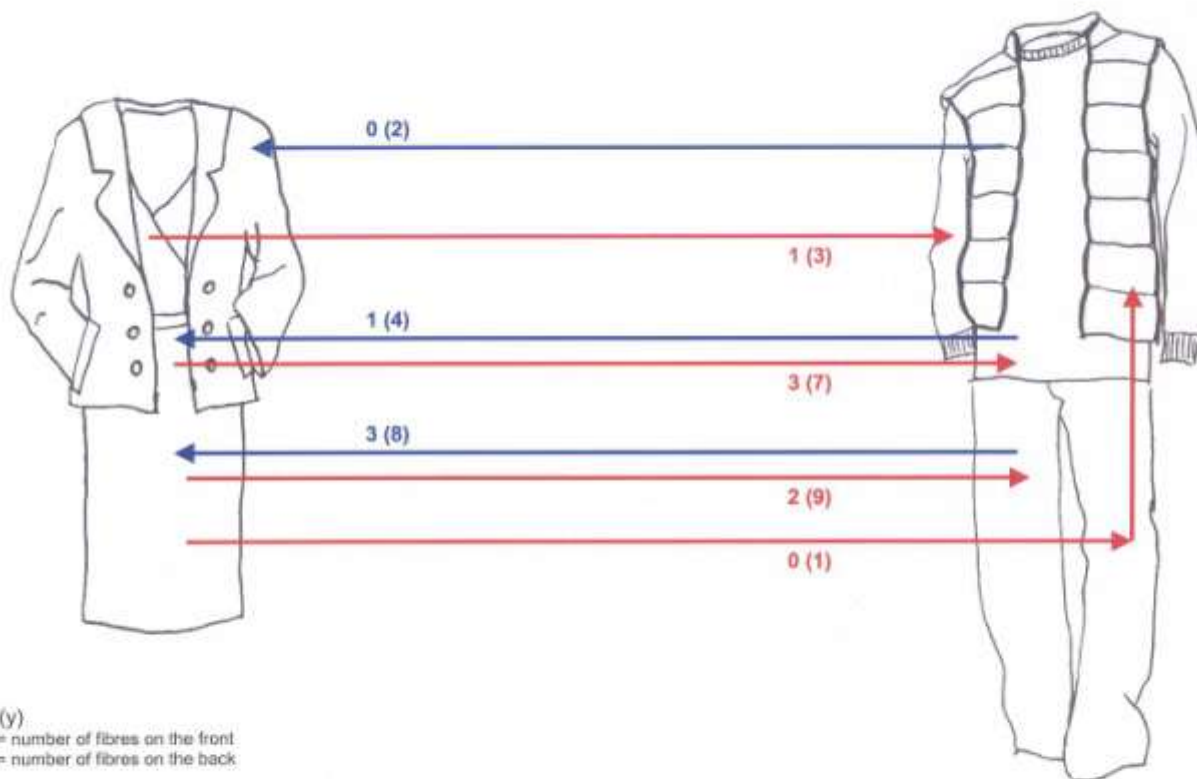


Suspect's fibres on victims clothes



# Fibre Contact Traces - Distribution and Persistence

## Fibre transfer



# **From „Crime Scene“ to Laboratory**

# Fibre Contact Traces - Distribution and Persistence



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# Fibre Contact Traces - Distribution and Persistence





**Decisions always have to be made  
to chose the suitable means and methods**

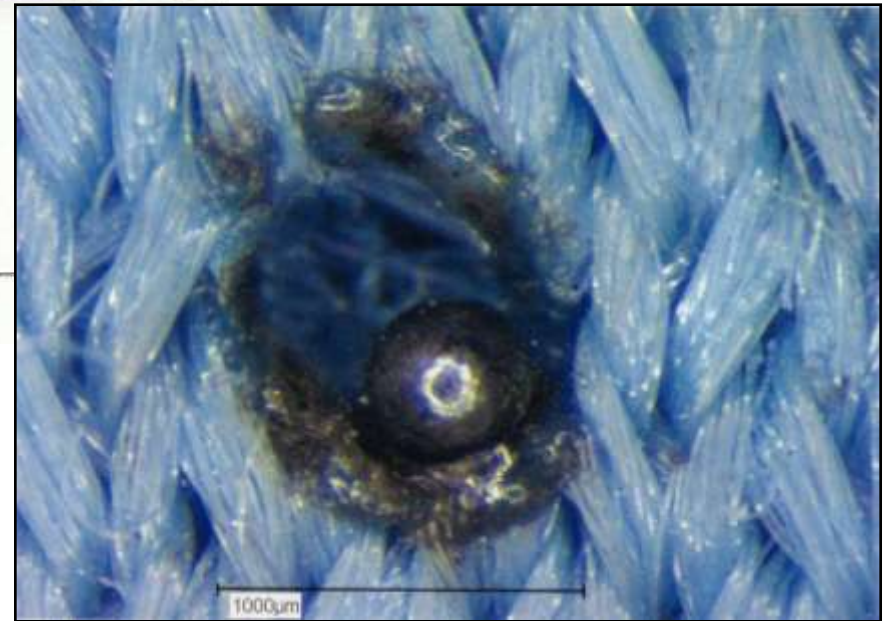
**It is essential to get reliable information  
for further examination and interpretation**

**Logic leads from A to B**

**Imagination leads everywhere!**

**Albert Einstein**

## Damages in Textiles





## Fibre Contact Traces - Distribution and Persistence

**Thank you  
for  
your attention!**

**contact:  
kornelia.nehse@polizei.berlin.de**