

Credibility Problem

Are we Analysts or Investigators?

Do we Understanding our job?

Definitions

- Criminalistics Principles
 - Individuality
 - Divisible Matter
 - Transfer

Principle of Individuality

No two objects in nature are identical.

Principle of Divisible Matter

Matter divides into smaller components when sufficient force is applied.

Principle of Divisible Matter

Corollaries:

- The process of division may produce features that are unique to the two pieces.
- When an object is separated into pieces, some features of the one piece will be retained by the separated piece.
- The passage of time may affect the two pieces differently

Principle of Transfer

When two objects come into contact, matter will be transferred from one object to the other, and from the other to the one

Principle of Transfer

Corollaries:

- When contact occurs between two objects, the transfer may be in either, or both, directions
- The rate and quantity of transfer depends on the properties of the materials in contact, the forces involved in the contact, and the time of such contact.
- The persistence of transferred matter depends on the properties of the transferred matter, the properties of the recipient object, and post-transfer actions affecting the recipient and transferred objects.

Unit Operations

Recognition

Preservation

Identification

Individualization

Reconstruction

Unit Operations

Recognition

Understanding and locating matter that may inform us about the circumstances of an event

Unit Operations

Recognition
Preservation

Observation, documentation, and
collection to maintain the information
value of physical evidence

Unit Operations

Recognition

Preservation

Identification

Place object in a class of similar objects

Unit Operations

Recognition

Preservation

Identification

Individualization

Establish that two things have a common
origin

Unit Operations

Recognition
Preservation
Identification
Individualization
Reconstruction

Determination of time sequence of events during
incident

Problems

- Technical errors

Cognitive Errors

- Examples

Efficiency Fallacy

Genetic Fallacy

Fallacy of expectation

Efficiency Fallacy

Reliance on easily observable facts

Genetic fallacy

Validity based on the origin of the data

Fallacy of expectation

Result is anticipated based
on understood paradigm

Hypothesis Formulation

■ Deduction

- **The Rule:** We have a jar of blue marbles.
- **The Case:** We select a marble from the jar.
- **The Result,** our hypothesis: The marble will be blue.

Hypothesis Formulation

■ Induction

- **The Case**: We have a marble from this jar.
- **The Result**: This marble is blue.
- **The Rule**, our hypothesis: The jar contains blue marbles.

Hypothesis Formulation

■ Abduction

- **The Rule** – This is a jar with blue marbles.
- **The Result** – This is a blue marble
- **The Case**, our hypothesis – This marble came from this jar.

Alternative hypotheses

- Difficulties

- Linear thinking

- Failing to think outside of the box

Alternative hypotheses

■ Difficulties

- Linear thinking
- Ockham's razor

The simplest explanation is the best

Alternative hypotheses

■ Difficulties

- Linear thinking
- Ockham's razor
- Modal fallacy

Confusion of terms, e.g., “Could be” and “is”

Alternative hypotheses

■ Difficulties

- Linear thinking
- Ockham's razor
- Modal fallacy

■ Evaluation

- Mathematical/statistical approach
- Alternative reconstruction