Signature Verification

Presented by the Oregon Secretary of State, Elections Division
Overview

• Purpose
• Letterforms
• Handwriting Characteristics
• Evaluating Signatures
• Accepting or Rejecting an Individual Signature
Letterforms

Notes
Individual letters are formed from a series of strokes. Examples of many common strokes are included in this training. Use these terms to describe similarities or dissimilarities between the letterforms in the signatures you are comparing.
Letterforms

eyelet

boat

compound curve
Letterforms

cross bar

retrace

i-dot
Letterforms

check
stroke

flag
Letterforms

By visually re-creating how the signature was written you can better identify similar or dissimilar characteristics.
Handwriting Characteristics

Style

- Most basic evaluation – cursive, hand printing, or a combination of the two
- Encompasses many characteristics such as proportions, slope, spacing and pen lifts
- Broad generalization which may be based in part on copybook style – Italic, Zaner-Blaser, Palmer, D’Nealian

Notes
A person’s handwriting and signature are a combination of learned forms, individualization of those forms and personalization. Humans are unable to robotically reproduce writing characteristics, instead we reproduce variations of a fixed mental model.

Copybook styles are a collection of letter formations with common features. Historically, students have learned handwriting by copying these styles. This can lead to the appearance of similar signatures between individuals who learned handwriting from the same copybook. If we were to closely examine similar signatures, we would be able to identify the characteristics which make the signatures unique.
Handwriting Characteristics

Skill

• The relative proficiency of the writer

• Affected by adherence to copybook forms, line quality, rhythm, and speed

Notes
An individual with a high skill level produces a signature that is fluid, rhythmic and may include flourishes. An individual with a low skill level produces a signature that is hesitating, slowly executed and may contain non standard letter formations. Is the writing sloppy, very formal, a combination of both?
Handwriting Characteristics

Alignment

- The placement of the signature relative to the signature line or baseline
- More distinctive to have obvious displacement in horizontal (indented) or vertical (rising or falling signature) aspect

W.H. Henry Houston

John Tyler

Hattie Redmond
Handwriting Characteristics

Fluency

• Defined by speed and line quality

  Speed
  • Estimated by examining the initial and terminal strokes
  • Initial and terminal strokes may be tapered or blunt and are an indication of speed and naturalness

Line Quality

• Degree of smoothness and fluidity of the written line
• Related to speed of the writing and the skill of the writer
• Poor line quality can be an indication of forgery
• Poor line quality may also be seen in the writing of elderly or ill individuals

Notes
Fast, fluid pen movement is difficult to duplicate when signing a signature not your own.

Indicators of fast handwriting: smooth writing movements; elongated and misplaced “i” dots and “t” crossings; words or initials connected; a “flattened” appearance; lessened legibility.

Indicators of slow handwriting: hesitation, tremor, more angular writing; “i” dots & “t” crossings in correct position; sharp delineation between separate pen movements; blunt starts and stops; writing is made of individual letters and legible; movements may be ornamental (embellishment to distract).
Handwriting Characteristics

Fluency (cont.)

vs.

Lyndon B. Johnson
George Washington
Ronald Reagan
Benjamin Franklin

Jimmy Carter
Andrew Jackson
Abraham Lincoln

Barack Obama

Zachary Taylor

Franklin D. Roosevelt

Winston Churchill

Harry S. Truman

Franklin D. Roosevelt

Vladimir Lenin

Joseph Stalin

Nelson Mandela

Vladimir Putin

Virginia J. Anderson

Saint Paul
Handwriting Characteristics

Proportion

• The relative heights and widths of the strokes of the letters

• Heights of the uppercase to lowercase letters

• Ascenders/descenders to letters which lack these features

W. Van Buren
Zachary Taylor
John Quincy Adams
Abraham Lincoln
James A. Garfield
(Andrew Jackson)
Handwriting Characteristics

Spacing

• Many types of spacing

• Examples include the space between words and numbers and between letters

Notes
Spacing between adjacent letters and parts of the signature are usually displays of habitual characteristics of the signer.
Handwriting Characteristics

Slant or Slope

- Angle of the axis of the letter relative to the baseline
- The baseline can be a visible line or an inferred line upon which the writing is placed

Notes
A signature’s slant may be forward and leaning to the right or “backhand” if it leans to the left. The slant may change from the beginning of the signature to the end. Slant can be indicative of left or right handedness but is not definitive.
Handwriting Characteristics

Size

• A relative assessment of how big or small the writing is

• Includes telescoping writing which is writing that gets larger or smaller from left to right as it is written

Florence Nightingale

[Signatures]
Handwriting Characteristics

Pen Lifts

- Hiatus in written line, may be subtle or dramatic
- Found in genuine writing and signatures, and also in forgeries

Notes
Pen lifts occur where letters connect and are a characteristic that is difficult to sublimate. Pen lifts which occur in the signature being verified but are lacking in the exemplar may indicate a different hand signed the ballot return envelope or petition sheet.
Evaluating Signatures

What to Look For

- General uniformity and consistency between signatures
- Agreement in the overall style and general appearance of the signatures
- Irregular spacing, slants, or sizes of letters are duplicated in both signatures.
- Agreement of the most distinctive, unusual traits of the signatures

Notes

First and foremost look for more similarities than dissimilarities. Identify any consistent unique characteristics between signatures. If a global overview does not demonstrate more similarities than dissimilarities between the signature and the signatures in the voter’s registration record conduct a localized examination, picking every characteristic of the signature in order to make a determination.

Don’t forget to take into consideration how the signature was executed. A voter may sign much differently depending on the context.

Additionally, as more and more signatures are being compared to DMV signatures it’s important to think specifically about how those signatures are created and what problems may be associated with that creation. Potential issues include, not signing with “legal” signature (e.g. voter uses one signature on formal documents another on informal documents and think license or ballot is one or the other), DMV signature is created using an electromagnetic process with the stylus communicating in real time with the signature capture pad (signature capture is only as good as the equipment), DMV signature capture pad forces voter to sign in a manner that is atypical (smaller, abbreviated, scrunched), the digital nature of creating the signature may cause unnatural or extraneous characteristics to appear in the signature because of the way the voter holds the stylus (pen lift isn’t appropriately captured because the pen remains close enough to the screen). This information is included to help you identify potential issues and reasons why a signature on a ballot or petition may exhibit more dissimilarities with the signature in the registration record. It is meant to inform not to override a no match determination.
Evaluating Signatures

What to Examine

• Examine the entire signature as a unit or narrow the scope of the examination to that of specific letters within a signature.

Global Examination
Broad characteristics that are used to evaluate the entire signature as a unit instead of its individual parts.

Localized Examination
Examinations of specific letters or combinations of letters within a signature.
Evaluating Signatures

What to Examine
Evaluating Signatures

Global Examination Characteristics

• Type of writing – hand printed, cursive or a mix of the two
• Speed of the writing – assess initial and terminal strokes as well as changes in pen pressure
• Line quality – identify any tremor or tracing guidelines
• Skill level of the writer
• Style of the writing
• Overall size of the writing
• Overall spacing of the writing
• Overall proportions
• Slant/Slope of the writing
• Style and construction of connecting strokes
• Position of the signature on the signature line or baseline
Evaluating Signatures

Localized Examination Characteristics

- Size – identify any letters that are given preference in size or conversely, suppressed
- Internal spacing – assess the space between individual letters or letter combinations
- Proportions – evaluate the components of individual letters and letter combinations
- Presence or absence of pen lifts
- Letters or letter combinations that have a divergent slant/slope
- Pinpoint characteristics that are distinctive within the voter’s signature
Accept or Reject

- Only a signature possessing obvious and predominantly matching characteristics (more similarities than dissimilarities) with the signatures in the voter’s registration record may be accepted as a valid signature.
  - A single distinctive trait is insufficient to conclude that the signatures are by the same writer. There must be a combination or cluster of shared characteristics. Likewise, there must be a combination or cluster of dissimilarities to conclude that the signatures may be by different writers.
Accept or Reject

• A signature possessing one or more distinctive dissimilarities from the signatures in the voter’s registration record shall be reviewed by at least two different elections officials before it may be accepted as a valid signature or rejected as non-matching.

• Dissimilar signatures that display the following characteristics may have been signed by someone other than the voter and should be thoroughly examined.
  o Hesitation, nervous lines
  o Angular, awkward changes in writing direction
  o Disconnected lines, uneven flow of ink
  o Retouching and patching
  o Lifeless appearance
  o May be slowly written with pen-lifts or
  o Inaccurate depiction of size shape, height relationships

Notes
Some common methods used to disguise handwriting include: writing very large or very small; writing very fast or very slow; an exaggerated slant; writing with the off hand; embellished or unnecessary additions to the letters; grotesque letter forms; heavy pen pressure; exaggerated block printing; combinations of any of previously listed.
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