

This checklist is my attempt to compile a comprehensive listing of all known variety and error types, subtypes, and associated effects.

While the traditional planchet-die-striking method of classification hasn't been completely abandoned, it has been absorbed into a much more detailed and precise taxonomy. This is intended to reflect the numerous steps (and missteps) in the minting process that generate the great diversity of anomalies presented here.

Many of the categories will be familiar to veteran collectors. Others will perhaps be dimly recalled, while others will be unfamiliar. Many of the more obscure error types have been treated in detail in articles published in *Errorscope*. These articles are referenced next to the appropriate entry ("ES").

I have tried to restrict this checklist to basic error/variety types and subtypes. Combination errors have been kept to a minimum. Had I attempted to incorporate all conceivable two-error combinations, this would have generated almost half a million entries. That would have been both unwieldy and unnecessary.

This checklist is a continually evolving project. Updated editions are posted on the CONECA website at odd intervals. Thumbnail illustrations are planned for the next edition. The ultimate goal is to use this checklist as the nucleus for a massive encyclopedia.

ES=*Errorscope*

Part I. Die Subtypes

Design errors, e.g.

- 1817 large cent with 15 stars
- 1826 half cent with 12 stars
- Misspellings (foreign only)
- Inaccurate design, e.g.
 - Italy 1000 Lire with outdated map borders
 - Canadian \$5 Olympic Coin. Runner with two left feet

Part II. Die Varieties

Broken hub

Broken punch

Doubled dies (incl. tripled dies, etc)

- Rotated hub doubling (Class I)
 - 175 degree rotation (ES, July/August 2003)
- Distorted hub doubling (Class II)
- Design hub doubling (Class III)
- Offset hub doubling (Class IV)
- Pivoted hub doubling (Class V)
- Distended hub doubling (Class VI)
- Modified hub doubling (Class VII)
- Tilted hub doubling (Class VIII)

- Single-squeeze doubled dies (often attributed to Class VIII)
 - Peripheral doubling
 - Centrally-located doubling

Repunched date

Blundered date

Misplaced date (e.g. digits in denticles)

Misplaced mintmark

Phantom mintmark (working hub has mintmark incompletely removed)
(e.g. faint D and S mintmarks in cents from the late 1990s)

Dual mintmark

1980 D & S cent (recently delisted)
1956 D & S cent (controversial)

Inverted mintmark

Horizontal mintmark (inevitably repunched)

Tilted mintmark

Repunched mintmark

Overmintmark (e.g. 1944-D/S cent)

Other repunched or re-engraved design elements

Denomination
Letters
Assay value

Omitted mintmark (e.g. 1982 no-P dime)

Omitted date (foreign only)

Other omitted design elements

Large and small mintmark varieties

Large over small mintmark

Different mintmark styles

Overdates

Caused by repunching
Caused by second hubbing with die of different date (Class III doubled die)

Dual Date (earlier date faint)

Caused by erasing earlier date on working hub or,
Caused by removing earlier date from working die and re-hubbing
(e.g. 1975 Bahamas 5c with faint date "1973" on opposite face)

Wrong date

Date later than final date of issue (e.g., 1913 Liberty Head nickel)
Date earlier than first date of issue (e.g., 1954 Mexico 5 centavos - small size)
Wrong digits (e.g., 1393/1893 Peruvian peso)
Transposed digits

Blundered dies (various types)

Part III. Die Installation Errors

Mules

Different denominations

Cent/dime mules (3-4 known, each unique)

Quarter/Sac dollar mules (3 die pairs)

Two-headed

1859 Indian cent (unique)

1982 Jamaica 1c (also comes in a two-tailed version)

Two-tailed

Two-tailed quarter (2-3 specimens, probably from 1965)

Two-tailed dime (1 specimen, probably from 1965)

Double-struck pseudo-mules (with two obverses or two reverses)

Different countries

New Zealand 2c / Bahamas 5c (1967)

Coin die matched with medal die

Canada “map mule”

Coin die matched with token die (ES, Jan/Feb 2008)

Double mules

Maryland obverse and reverse dies on Sac planchet in Sac collar (unique)

Temporal mules (with next year’s or previous year’s design) e.g.,

1964 Austria 25 schilling

1959-D wheatback cent (controversial)

Transitional mules (with next year’s or previous year’s design and composition)

1942-S nickel with small S-mintmark to right of Monticello (unique)

1993 St. Petersburg Russia 50 roubles

Mismatched business / proof dies

1999 \$5 and \$10 gold eagles struck with unfinished proof dies (W mintmark)

Business strike cents with proof-style reverse

Proof cents with business-style reverse

1956 -1964 quarters with “Type B” proof reverse

Finished proof die matched with business die (foreign only)

Minor transitional mismatches (“mini mules”) e.g.:

1939 nickel with reverse of 1938

1940 nickel with reverse of 1939

1964-D quarter with the “Type C” reverse of 1965

1988 cent with reverse of 1989

1992-D cent with “close AM”

Part IV. Die Errors

Inverted die installation (not an error)

Older issues struck with inverted dies (e.g. buffalo nickels and Mercury dimes)

Recent installation of inverted dies (beginning 1992)

Saddle strikes produced by inverted dies

Rotated die errors

- Rotated die due to improper installation
- Rotated die due to improper die preparation
(e.g., grinding flats in wrong spot)
- Rotated die due to movement after installation

Reeding vs. no reeding varieties (foreign only)

Concentric lathe marks (ES, Nov/Dec 2003) e.g., some 1996 cents

Excessively deep rim gutters e.g., some 1996 cents

Rockwell test mark left in die (bump seen on coin) (ES, July/Aug 2006)

Collar manufacturing errors

- Excessively wide collar (ES, Nov/Dec 2002)
 - Created by wrong broach
 - Improper use of correct broach
 - Widening due to wear
- Abnormal reeding, e.g:
 - 1921 Morgan dollar with infrequent reeding
 - 1924-D Mercury dime with infrequent reeding
 - Low, widely-spaced reeds caused by accidental (?) truncation of ridges on collar face
(e.g. 1964 25c; New Mexico 25c;)

Collar installation errors

- Smooth edge instead of reeded edge (and vice versa)
- Smooth edge instead of edge design (and vice versa)
- Reeded edge instead of edge design (and vice versa)

Die retouching, e.g.:

- Re-engraved "AW" mintmark on 1944-D half dollar
- Re-engraved front of Lincoln's coat (1953 proof cent)
- 1938 proof nickels with re-engraved letters and design details (ES Jan/Feb 2009)

Die damage (ES, Nov/Dec 2004, Jan/Feb 2003)

- Die dents (ES, Nov/Dec 2004, July/August 2005, Nov/Dec 2005)
- Die scrapes
- Accidental die scratches
- Die gouges
- Impact scars
- Accidental die abrasion
- Intentional die abrasion ("die polishing")
 - Heavy die scratches
 - Thinning and loss of design elements
- Peripheral die damage (ES, March/April 2005)
 - Die attrition errors (ES, May/June 2003, March/April 2005)
- Catastrophic die damage (ES, March/April 2002)

Hubbing-induced deformation

Wavy steps (Lincoln cents only) (ES, July/Aug 2006, Nov/Dec 2006)
Trails (ES, Sept/Oct 2006, Nov/Dec 2006)

Collar damage

Clashed dies (ES, March/April 2002)

Chatter clash (multiple staggered clash marks)
Double clash with reciprocal counterclash (Type 1) (ES, Nov/Dec 2004)
Misaligned die clashes (ES, May/June 2004, July/August 2004)
 Horizontally misaligned die clash
 Vertically misaligned (tilted) die clash
 Pivoted die clash
Mule clash errors, e.g. (ES, July/August 2002)
 1864 2c reverse die clashed with Indian cent obverse die
 1857 1c obverse die clashed with seated 50c obverse die
 1857 1c obverse die clashed with seated 25c reverse die
 1857 1c obverse die clashed with Liberty \$20 obverse die
Floating die clash (collision with die fragments)
 (ES, May/June 2002, May/June 2005)

Collar clash

Hammer die
Anvil die (uncommon)

Die damage with design transfer

Category A: Collision with die fragments (“floating die clash”) (ES, May/June 2002, May/June 2005)

Category B: Counterclash (Type 2) (ES, May/June 2002, July/August 2002, Sept/Oct 2002, Jan/Feb 2009)

Category C: Miscellaneous and unexplained forms of design transfer/duplication

Die deterioration/deformation errors

Severe die wear
 Radial flow lines
 Concentric flow lines (uncommon)
Die deterioration doubling
 Incuse die deterioration doubling (uncommon)
“Blebs” or “patches” of die erosion (ES, July/Aug 1998)
Progressive, indirect design transfer
 Common in 1946-S and 1948-S cents
Soft die errors (ES, July/Aug 2001, Nov/Dec 2001)
 (premature, localized, exaggerated, and peculiar patterns of deformation)
 e.g., 1943-S “goiter neck quarter”
“Ridge rings” on copper-plated zinc cents
Well-defined rings on Euro coins (ES, Sept/Oct 2006)
Die subsidence (ES, July/August 2004, Nov/Dec 2004)
 e.g., 1924-S “goiter neck cent”
 Co-occurring with split dies
Design creep
 In late die state 1979 dimes and 1982 quarters

“Starburst” pattern of radial streaks on Sacagawea dollars (cause uncertain)
Reciprocally deformed, convexo-concavo dies (2001-P 50c) (ES Sept/Oct 2008)

Die breaks

Cuds

- Ovoid (typical) cuds
- Crescentic cuds (ES, March/April 2005)
- Circumferential cuds (ES, March/April 2005)
- Rim-to-rim cuds (ES, May/June 2003)
- Retained Cuds (ES, Jan/Feb 2006)
 - Anvil die
 - Hammer die
 - Cud sinks in
 - Cud protrudes beyond die face (rare)
 - With vertical displacement
 - With horizontal offset
 - With lateral spread
- Interior (internal) die breaks (ES, May/June 2003)
 - Connected to die cracks or splits
 - Freestanding (ES, May/June 2005)
- Retained interior die breaks (ES, July/August 2004)
 - Connected to die crack or split
 - Freestanding
- Rim cuds
- Die chips
- Catastrophic die failure (ES, May/June 2007)
- Spontaneous breaks
- Breaks produced by impacts

Collar cuds (collar breaks) (ES May/June 2008)

- Complete collar break (abrupt loss of entire arc segment)
- Irregular collar break
- Chipped collar
- Vertical collar crack
- Horizontal collar crack (theoretical only)
- Retained collar cud
- Rotating collar cud (ES, July/August 2003)
- Unilateral split collar (theoretical only)
- Bilateral split collar

Die cracks

- Rim-to-rim
- Curved rim-to-rim (“pre-cud”) (ES, Jan/Feb 2006)
 - With lateral spread
- Blind-ended
- Bi-level die cracks (ES, July/August 2004)
- Shattered die (ES, Jan/Feb 2006, May/June 2007)
 - Two or more splits in die
 - Numerous wide, intersecting, raised die cracks
 - Numerous intersecting bi-level die cracks
 - Various combinations of brittle fracture

Split dies (ES, Jan/Feb 2006)

Median (bisecting) split die
Asymmetrical split die

Part V. Planchet Errors

Alloy errors

Improper alloy mix
 Poorly mixed alloy
 Incorrect proportions of metals
Gas bubbles
 Intact
 Popped
Slag inclusions (ES, May/June 2006)
Intrinsic metallic inclusions (ES, Sept/Oct 2006)
Lamination errors
 Loss before strike
 Loss after strike
 Lamination cracks
 Retained laminations
 Folded before strike
 Laminations in clad coins
Split planchets
 Before strike
 After strike
 Struck with another planchet on top or beneath
 Split core (clad coins)
Clamshell splits
 Clamshell folded over before strike
Cracked planchets
Broken planchets / coins
 Before strike
 After strike
Brittle coins (cross-classified with annealing errors)
Bubbled planchets
Crumbling planchets
Ragged clips
Ragged notch
Ragged perforations (“blowholes”)
Fissures -- ragged and smooth
Other alloy errors

Rolling Mill Errors

Rolled-thick planchets
Rolled-thin planchets
Tapered planchets
Rolling indentation (ES, Jan/Feb 2000)
Rolled-in scrap (ES, May/June 2006)
 Bristles from descaling brush

Blanking and Cutting Errors

Curved clips

- Crescent curved clips
- Bowtie clips (ES, Nov/Dec 2005)
 - Two large clips at opposite poles
 - Four clips, punch slices through previously punched strip
 - Struck chopped webbing

Straight clips

- Smooth straight clips
- Irregular straight clips
- Sawtooth clips
- Incomplete straight clip (most likely just cuts from guides)
- Corner clip (“outside corner clips”)
- Assay clip (“inside corner clip”) (cross-classified with pre-strike damage)
- Ragged clips (also listed under alloy errors)
- Incomplete punch (incomplete clip) (ES, May/June 2005)
- Elliptical clips (ES, May/June 2005)
- Multiple clips and combination clips
- Blanking burr (“rolling fold”) (ES, Jan/Feb 2007)
- Punched-in scrap (ES, May/June 2006)

Upset Mill Errors

- Coins struck on Type I blanks
- Coins struck on minimally upset planchets (ES, July/August 2005)
- Coins struck on planchet that's too upset (best seen on off-center strikes)
- “Groovy edge” (possibly from worn groove in upset mill)
- Variation in cross-sectional shape of planchet rim/edge junction of planchet
- Rim burrs (cross-classified with pre-strike damage)
- Struck coin sent back through upset mill
- Abnormal upset (ES, Sept/Oct 2005)
 - Wide, flat edge
 - Smoothly convex edge
 - Abnormally wide proto-rim
- Squeezed-in debris (ES, May/June 2006)
 - Foil-like metal extends from obverse face to edge to reverse face
 - e.g. Copper foil on nickels (not from improper annealing)

Edge design errors (impressed into planchet before strike)

(includes security edge errors)

- Edge design missing
- Edge design present on normally plain edge
- Wrong edge design
- Edge design too high or too low
- Interrupted edge design
- Tilted edge design

Mispunched center holes (foreign only)

- Off-center
- Double punched center holes
- Irregular center holes
- Unpunched center holes

Annealing Errors

- Excessive and/or prolonged heat (replaces “sintered plating” and “copper wash”)
 - Black, brown, red, coppery discoloration (includes “black beauty” nickels)
 - Layer of copper, often peeling
- Poorly annealed or unannealed planchets (hard, brittle planchets)
- Brittle coins (cross-classified with alloy errors)
- Unexplained planchet hardness
 - 1954-S nickels

Miscellaneous forms of discoloration

Plating Errors

- Incomplete plating
- Unplated cents
- Thin plating
- Thick plating (ES, March/April 2009)
- Blistered plating
- Brassy plating
- Split and peeling plating

Bonding/Bonding Mill Errors (ES, Sept/Oct 2002)

- Missing clad layer
 - Full
 - Before strike
 - After strike
 - Before bonding mill (full weight) (ES, Sept/Oct 2002, Nov/Dec 2006)
 - Partial
 - Before strike
 - After strike
 - Before bonding mill
- Thin cladding
 - With gaps
- Missing both clad layers
 - Core thickness (ES, Sept/Oct 2003)
 - Full thickness
- Struck Clad layer
 - Split off after strike
 - Split off before strike
 - Struck by itself
 - Struck on top of or beneath a normal planchet
- Clamshell separation
 - Clad layer folded over before strike
- Missing core
 - Partial
 - Full
- Copper-and-zinc composite “shells” (ES, May/June 2001)
 - Split-after-strike (N.B. these may all be detached cap bottoms)

Irregular planchets

- Scraps
 - Normal alloy/composition
 - Off-metal

- Feeder finger material
- Foil
- Ragged clip (cross-classified with alloy errors)
- Ragged notch (cross-classified with alloy errors)
- “Blowholes” (cross-classified with alloy errors)
- Fissures (cross-classified with alloy errors)
- Cracked planchets (cross-classified with alloy errors)

Pre-Strike Damage

- Assay clip (cross-classified with blanking errors)
- Rim burrs
- Accidentally and intentionally “resized” planchets
- “Cutmarks” (mostly found on off-metal errors 5c/1c, 5c/10c)
- Rockwell test mark in planchet (circular dimple) (ES, July/Aug 2006)
- Planchet with adjustment marks (gold and silver planchets filed to return heavy planchets to normal weight)
- Other forms of pre-strike damage
 - Gouged
 - Crushed
 - Scraped
 - Torn
 - Crumpled

Wrong planchet and off-metal errors

- Wrong planchet, correct composition
- Off-metal
 - Domestic
 - Foreign
 - Unidentified origin (orphan) (ES, Sept/Oct 2006, Nov/Dec 2006)
- Pure copper quarters and dimes (covered under bonding mill errors)
- Pure clad dime (covered under bonding mill errors)
- Wrong stock errors
 - Correct composition
 - Off-metal (e.g., 1987-P nickel struck on clad quarter stock)
- Business strike on special off-metal planchet (e.g., silver Ikes)
- Business strikes on proof planchets
- Proof strike on business planchet
- Wrong date error (covered under mules and die manufacturing errors)
- Double denomination errors
 - Same year
 - Different year
- Dual country
 - Same year
 - Different year
- Intentional overstrikes (not an error)
- Transitional errors (“wrong series”) (ES, Sept/Oct 2001)
- Struck on smaller planchet or coin
- Struck on same size planchet or coin
- Struck on larger planchet or coin
 - 1981 cent on nickel planchet, uniface reverse

- 1981 dime on cent cap
- Canadian “assisted errors” 1977 - 1981
- Struck on loose clad layer (covered under bonding mill errors)
- Weld seam planchets (controversial)
- Coins struck on washers, gears, and other hardware
- Coins struck on “aluminum” feeder fingers
- Experimental issues:
 - State quarters on experimental alloys - tests for Sacagawea dollar
 - 1974 aluminum and plated steel cents

Part VI. Striking Errors

Unstruck blanks (“Type I”)

Unstruck planchets (“Type II”)

Die alignment errors

- Horizontal misalignments
 - Hammer die
 - Anvil die (ES, Sept/Oct 2004, March/April 2005)
 - With misaligned collar
 - With broken collar
 - Dynamic misalignments
 - Stable misalignments
- Vertical misalignments (ES, Jan/Feb 2003, Sept/Oct 2003)
 - Hammer die
 - Anvil die
 - Dynamic misalignments
 - Stable misalignments
- Rotated dies (also covered under die installation errors)
 - Improper installation
 - Improper guide marks on die
 - Loose fit, sometimes with subsequent re-tightening in wrong position
 - Dynamic rotated die errors
 - Fixed rotated die errors
 - Pivoted die error (probably involves entire die assembly)
- Misaligned collar
 - Associated with misaligned anvil die
 - Associated with stiff collar error
 - Associated with elliptical strike clip

Collar deployment errors

- Partial collar
 - Flange with bevel
 - Flange without bevel
 - Tilted partial collar
 - Reversed partial collar (not an error)
 - High deployment of collar with coin metal extruded beneath
- Broadstrikes
 - Centered
 - Uncentered
 - Cupped broadstrikes
 - Forced broadstrikes

- Partial collar broadstrikes (shows incomplete, tilted partial collar)
- Stiff collar errors (ES, Nov/Dec 2000)
 - Strong collar scar
 - Strong collar scar with cupping
 - “Ram strike” (ES, Nov/Dec 2000, March/April 2001)
 - Elliptical strike clip (ES, March/Apr 2000)

Weak Strikes (ES, Sept/Oct 2000)

- Caused by insufficient die approximation
- Caused by abnormally low ram pressure
- Invisible strikes (ES, March/April 2003, Nov/Dec 2003, March/April 2004, Nov/Dec 2006)
 - With indent
 - With partial brockage
 - With strike-through error
- Followed/preceded by strong strike

Abnormally strong strikes

- Due to abnormally high pressure setting
 - Finning
 - Extremely large broadstrikes
 - Extreme stretch strikes with both sides die-struck
- Due to stacked coins or planchets
- Localized, due to die tilt

Stutter Strikes (ES, Nov/Dec 2001, Sept/Oct 2007)

- Due to planchet flexion (associated with indents and brockages)
- Due to die instability
- Due to spasmodically collapsing collar
- Due to contact with bent planchet/coin

Machine doubling (a.k.a. machine doubling, machine doubling damage, machine damage doubling, mechanical doubling, strike doubling, shift doubling, ejection doubling) (ES, July/Aug 2006)

- “Push doubling” (marginal shelving and sharp interior duplication)
- “Slide doubling” (smear design)

Rim-restricted design doubling (cause uncertain)

- 2004 cent (ES, March/April 2007)
- Presidential dollars (ES, Sept/Oct 2007)

Design scraped off by die movement on second strike (ES, March/April 2008)

One-sided multi-strikes (ES, March/April 2000, Jan/Feb 2002, July/August 2003)

- Hammer die rotated
 - Instantaneous
 - Gradual
- Hammer die misaligned
 - Instantaneous
 - Gradual
- Anvil die rotated (at least one known example, a proof Kennedy half dollar)

Off-center strikes

- Cupped off-center strikes
 - With collar scar
 - Without collar scar
- Uniface strikes
- Stretch strikes
 - Uniface
 - Die struck on both faces (covered under high pressure strikes)
- With unexplained, flat dent at opposite pole
(not “sideneck strike”)

Chain strikes

- Normal chain strikes with straight edge
- External chain strikes (ES, Jan/Feb 2003)
- Concave, convex and irregular chain strikes (ES, Jan/Feb 2001, July/August 2002)

Wraparound strikes (theoretical, so far)

- Edge of off-center coin wraps around obstruction on die face

Saddle Strikes

- Hump present
- Hump absent
- Die position
 - Head to head
 - Head to base (early to mid- '70s)
 - Other orientations
- Gap between adjacent dies
 - Narrow
 - Wide
- Sideneck strikes (“one-die saddles”) (Expanding planchet collides with side of die neck)
- With inverted die installation

Broadstrikes (covered under collar deployment errors)

Foldover Strikes (ES, July/August 2007)

- Out-of-collar
- In-collar
- With edge strike persisting
- On struck cents (normal and error)
- Double foldover strikes (Z-fold)
- Axial fold
- Paraxial fold
- Inward fold
- Outward fold

Edge Strikes

- Flat
- Bent
- With off-center strike produced by continuation of downstroke

Extrusion strikes (an effect, not an independent error) (ES, March/April 2004)

- With indents and partial brockages
- With strike-through errors
- Other

Multiple strikes

- On-center/Off-center
- In-collar/out-of-collar
- Flipover
- Numerous closely-spaced strikes (ES, Nov/Dec 2004)
- Delayed second strikes (ES, July/August 2007)

Indents

- Full/partial
- In-collar/out-of-collar
- Full
 - Centered
 - Uncentered
- “Internal” indents
 - On obverse
 - On reverse
- Multiple indents
- Irregular indents
 - Produced by error coins
 - Coins struck through clipped planchets
- Indents by smaller planchets

Brockages

- Full/Partial
- In-collar/Out-of-Collar
- Full
 - Centered
 - Uncentered
- From another, smaller denomination (ES, May/June 2005)
- From another error coin
- Flipover brockage
 - On obverse
 - On reverse
- Aligned brockages (ES, May/June 2005)
 - From partial die caps
 - From elliptical clip coin
 - From elliptical strike clip coin
- First-strike brockages
 - “Mirror” brockages (unexpanded, undistorted)
 - Distorted first-strike brockages
- Mid-stage and late-stage brockages
- By struck fragment
 - Aligned with opposite, die-struck design
 - Not aligned with opposite design
- From struck die fill (very rare)

Multiple brockages

- From multiple strikes
- From shifted, early die cap
- From multi-struck coin

Rotated brockages (relative to die-struck design)

Clashed cap strike

- From a late-stage die cap that clashed with the opposite die
- From a uniface die cap that clashed with the opposite die
- From an early-stage die cap that clashed with the opposite die
- From a cap that was striking counterbrockages that clashed with the opposite die

Counterbrockage

Full/Partial

In-collar/Out-of-collar

Counterbrockage of obverse on obverse

Counterbrockage of reverse on reverse (rare)

Flipover counterbrockage

Early, mid-, and late-stage counterbrockages

From another error coin

Brockage-counterbrockage combination (8 types) (ES, Nov/Dec 2009)

Die caps

Obverse die caps (obverse die functioning as hammer die)

- Raised reverse design
- Brockage on reverse face
- Uniface die caps
- Complex die caps

Reverse die caps (reverse die functioning as anvil die)

Centered

Uncentered

- Cupped toward anvil die, hammer die, both dies at opposite poles, or expanded in the horizontal plane

Partial (off-center) die caps (hammer or anvil)

- With cupping
- Without cupping

Detached cap bottoms (ES, March/April 2001, May/June 2001)

Capped die strikes (generic -- without identifiable images)

Through uniface cap

Through late-stage die cap

Through cap-like obstruction

Capped die doubling (doubling associated with capped die strikes) (ES, Sept/Oct 2005)

Shifted/rotated cap strikes (ES, May/June 2000)

Normally-oriented incuse design elements

- Multiple sets due to several preceding shift-and strike events

- Unexplained, close raised doubling
- Expansion ripples
- Incuse doubling surrounding raised elements
- Other forms of capped die doubling

“Struck-through” errors

- Struck through fragment
- Struck through clipped planchet (ES, Sept/Oct 2002)
- Struck through thin struck fragment
 - Face-up (normal-incuse design elements)
 - Face-down (mirror image design elements)
- Struck through clad layer
 - Struck through struck clad layer
- Struck through loose (sheared-off) reeding
- Struck through split planchet
 - Obverse
 - Reverse
- Struck through feed finger (ES, Nov/Dec 2005)
- Struck through die fill
 - “Grease strikes”
 - Many kinds of die fill and resulting textures
 - Struck through smooth, viscous material (grease, oil)
 - Silvery, flaky die fill (some state quarters)
 - Black, crusty die fill
 - Doubling associated with (ES, March/April 2006, July/August 2006, Nov/Dec 2008)
- Struck through miscellaneous foreign matter
 - Metal dust, shavings
 - Thread
 - Cloth
 - Wire
- Split or torn in two by struck-thru object (ES, Nov/Dec 2007)
- Dropped fillings (ES, May/June 2003)
 - Retained dropped fillings
- Retained strike-thrus (struck-in errors)
 - Embedded dropped fillings (see above)
 - Scrap metal
 - “Staples” (carding brush bristles)
 - Plastic (associated with bullion coins)
 - Metal foil
 - (Cu-Ni?; associated with dimes and nickels)
 - Copper foil (ES, Nov/Dec 2007)
 - Rubbery material (from die cover?)
 - Other
- Filled dies
 - Single design elements
 - Multiple design elements
- Filled collar /obstructed collar (ES, Jan/Feb 2006)
 - With flange
- Surface film effects (ES, May/June 2002)
 - Surface film doubling
 - Surface film “afterimage”
 - Surface film transfer
 - Surface film transfer with clash marks

Uniface strikes

- In-collar
- Out-of-collar (cross-classified with indents)
 - Centered
 - Uncentered

Sandwich strikes (coin struck between two coins or planchets)

- Partial
- Full
- Between two struck coins
- Between two planchets
- Between a coin and a planchet
- Between obverse and reverse die cap

Nested coins

Mated pairs

Bonded coins

Pile-ups

Ram strikes (see stiff collar errors) (ES, Nov/Dec 2000)

- Normal die installation (pre-1997)
- Inverted die installation (post-1997)
- Association with misaligned dies
- Association with misaligned collar

Strike clips (ES, July/Aug 1999, May/June 2001)

- Conventional strike clips
- Elliptical strike clips
- Saddle strike/strike clips
- “Pinch clips”
- Other

Detached reeding

- From forced broadstrikes
- From stiff collar
- Other

Coin shrapnel (“breakaway fragments”)

- Angular pieces
- Roughly circular pieces
- Semilunar pieces
- Other shapes

Cupping

- With and without collar scar
- In a single strike

Associated with multiple strikes
With die caps
Cupping toward hammer die
Cupping toward anvil die
Expansion in horizontal plane

Bi-metallic errors (foreign only) (ES, Nov/Dec 2005)

Misaligned core (ES, May/June 2007)
Misaligned core hole (ES, Sept/Oct 2007)
 Well-seated core
 With misaligned core
Double-punched hole
Unpunched hole
 Solid disc of ring metal
 Solid disc of ring metal with embedded core
Solid disc of ring metal with core indent
Ring with incomplete punch
Core with incomplete punch
Struck outer rings (ES, Jan/Feb 2007)
Struck cores (ES, Nov/Dec 2006)
Wrong core inserted
Wrong ring (ES, March/April 2007)
Ring accidentally punched from solid planchet
Ring accidentally punched from solid coin (ES, Nov/Dec 2008)
Struck ring from another country (restruck)
Struck core from another country (restruck)
Unstruck core inserted into struck ring and then restruck
Abnormally small core (controversial)
Abnormally wide hole (controversial)
Abnormally thin core
Abnormally thick core
Abnormally thin ring
Abnormally thick ring
Tri-laminar core missing a layer
Core punched out of ring strip
Ring punched out of core strip

Multi-sided coins (foreign only)

Malrotation
 Broadstruck
 Ram strike

Part VII. Post-Strike Mint Modifications

Edge lettering applied after strike (incuse) (Presidential dollars)

Omitted lettering
Vertically misaligned letters (cut off at top)
Vertically misaligned letters (cut off at bottom)
Wrong spacing between incuse design elements
Obliquely-oriented lettering
Overlapping letters

Two sets of letters
Skipped letters
Letters on wrong planchet
Chipped letter
Lightly impressed letters
Incomplete letters
Smeared letters

Note: Edge lettering and other edge design elements may be impressed during upsetting, during the strike, by a special machine before the strike, or by a lettering device after the strike. Similar-looking defects can occur in each of these processes.

Post-strike chemical treatment

Experimental rinse on Sacagawea dollars

Part VIII. Post-strike die contact

Ejection impact doubling (post-strike design transfer from die) (ES, Jan/Feb 2005)

Possibly some forms of rim-restricted design duplication

Part IX. Post-strike mint damage

Pseudobrockage (false brockage) (ES, Nov/Dec 1999)

Fused coins

Folded, crushed, etc.

Part X. Wastebasket/Composite Categories

Ghost images

Progressive, indirect design transfer
Worn clash marks
Thin planchets
Split planchets
 split-before-strike
 split after-strike
Coins thinned by strike(s)
Weak strikes
High pressure strikes
“Greasy ghosts”
Surface film afterimage
Surface film transfer
Split-line afterimage
Other causes

Doubling

Die Deterioration Doubling
Machine Doubling
“Abrasion doubling” (largely a myth)

Incuse doubling in plated coins
Split-line doubling
Surface film doubling
Doubling associated with grease strike
Longacre doubling
Other forms of doubling ■