

The Penchants & Pitfalls of Collecting & Researching Die States

By Steve M. Tompkins

One of the true pleasures of collecting is in the accumulation of items for your collection. The ultimate pleasure is the pursuit of each new piece that, together as a whole, represents one step closer to completing a predetermined set or collection.

Collecting Early Federal United States coinage of any denomination is the epitome of the fanatical side in collecting. Once one is drawn in to the history, beauty and thrill of discovery these historical time capsules have to offer, the journey is just beginning, as one moves from filling holes in a date set, to the pursuit of die marriages and die re-marriages.

In our perpetual quest towards completeness (or insanity if you prefer!), one is eventually driven even to the extremes of any and all things related to our subject collection whether it be counter-stamped coins; engraved coins; error coins; or literature, such as old auction catalogs or books written on the subject. One such extreme is the collecting of die states.

For years there has been much debate, with many differing opinions, as to what constitutes a given die state. The main gist of these debates is where a die state begins and where it ends. Where does one make the break between **Die State 1** and **Die State 2** (DS-1, DS-2) for example as well as the proverbial **A, B & C**? What should or should not be included as a separate die state? What to call those coins in transition between stated stages are also of concern. And then there is the eventual question of rarity of a certain die state.

For generations, numismatists have used the term Die "State" as a means of describing a dies deteriorating progression as it is reflected by the coins struck from these dies. "State", however, is probably not the best word to use in describing these events. A better and more descriptive word is "Stage".

Let us look at the definition of Die "State". Listed in my dictionary are 27 definitions to choose from. No single definition of "state" exactly pertains to what we normally talk about as it relates to coins. The closest is the following:

***State**; noun, the condition of a person or thing, as with respect to circumstances or attributes.*

Next, is the definition of Die "Stage". While my dictionary lists 23 different definitions for the word stage, I believe the first one listed can best be applied to the subject at hand.

***Stage**; noun, a single step or degree in a process; a particular phase, period, position, etc., in a process, development, or series.*

While both of these terms can, and have been, used in describing the ongoing changes and degradation of the coin dies and subsequently the coins struck from those dies, this author will campaign for the use of stage instead of state whenever possible as it is more accurate and descriptive. The deterioration of the die is a result of the process involved in striking coins. Perhaps if we wish to be even more accurate when describing the life progression of a die as reflected by the coins, we should say that a coin is at a particular state of a die stage. It is also this authors hope that future writers and authors of reference books will embrace and perpetuate the use of stage over state.

Die states or stages are both easy to understand and yet difficult to define. As different characteristics develop during the striking of subsequent coins such as die cracks, cuds, die clashes and general die deteriorations; the die is at different stages of that deterioration. While some of these stages may last for a long time, others are fleeting and may rapidly advance to another stage. Consequently, EVERY COIN STRUCK MAY CONSTITUTE A DIFFERENT DIE STAGE or MULTIPLE COINS STRUCK MAY SHOW THE SAME DIE STAGE!

If a die stage changes rapidly, such as a die crack progressing upon each strike or when a set of dies are repeatedly clashed, each coin struck may be unique in the progression. Would anyone like to take a stab at listing or collecting every unique coin produced?

Listings in reference books on each of the bust coinage series may or may not list all these divisions. When they are mentioned, there is usually no consistent methodology employed in describing one die stage from another or even in listing every die stage known of a given die marriage. A case in point is found in Overton's *Early Half Dollar Die Varieties 1794 - 1836*. Die stages were never the books main focus. However, many different die stages are shown and described, but many significant ones were omitted. Again, there was no consistency employed throughout the book.

In the original Browning edition of *The Early Quarter Dollars of the United States 1796 - 1838*, Ard Browning did list various die stages for most all of the die marriages he described. There are large holes however, omitting some common and some not so common die stages, as well as numerous intriguing die stage varieties. In the 1992 updated Browning, Walter Breen made some valiant attempts at listing even more of these stages and broke them down even further. He added more divisions in his notes that followed the die marriage identifying descriptions. But, how Breen made the decisions as to where a particular die stage started and stopped is anyone's guess. Perhaps the problem for both Browning and Breen was their inability to see every coin extant to be able to list all the die stages for the series. On a side note, in the original edition die stages are listed as **A, B & C**, whereas the Breen edition lists them in Roman numerals.

In recent issues of the JRJ there have been several articles which inherently deal with die stages in the form of cuds. While these articles have gone a long way towards showing what so called "terminal die stages" are available, there has been no general consensus as to what to call a particular stage of a given die. I, for one, am still a little confused as to what die stage constitutes a cud and the differing adjectives added to this word such as retained, full, etc. We all seem to know a cud when we see one, but what is the true definition? There is no definition that makes sense in the dictionary as applied to coins. The authors of one of these articles stated that the definition of a cud was interchangeable with the term die break. While in some ways I can agree with this, I believe we need to at least separate the two terms "die break" and "die crack" as they are two completely different events. If their logic were used, then all die breaks and die cracks would be cuds, which they most certainly are not. Also, while the collar could hold in a retained cud on the anvil die so that it wouldn't fall out, the broken section could still either sink or be raised above the surface plane of the die to create a "full" cud.

It is this author's contention that the definition of the stages of a cud should be listed as follows:

Retained Cud or Die Break Stage: This definition should be applied when die cracks have encompassed a defined area such as from one point on the rim to another point on the rim; an area connected by either cracks or devices; or a splitting of a die crack into two distinct cracks which then come back together again into a single crack. Applicable to all these definitions is that the encompassed section is even or level with the surface plane of the rest of the coin.

Full Cud Stage: This definition should be applied when the area encompassed in the retained stage shifts to a level above or below the surface plane of the struck coin or the area has completely fallen out of the die resulting in a blob of undefined metal where the missing piece of the die did not impart an impression and the metal was allowed to freely flow into this recess. Combining these events into one definition is a result of the difficulty in determining if a section of a die has fallen out or the raised surface has been worn away by circulation on a lower grade coin.

As to the pitfalls of determining a particular stage of a coin, one has several factors to consider, some of which are listed below.

1. The difficulty in obtaining conclusive evidence on a circulated coin.

The very thing that determines a coin's grade is wear. Wear of the coin's surface will of course change or erase visual clues that relate to its die stage. For this very reason it is this author's opinion that when doing credible research as it relates to die stages, the coins examined should be as high grade as possible and at least EF+ and above in grade.

A case in point is the recent sale of the Jules Reiver collection. This was a great opportunity to study one man's accumulation of die stages in most of the known die marriages from our early Federal Coinage. As well as viewing all of the coins at the auction, I had the unique opportunity to purchase a large portion of Jules's Bust Quarters (59) prior to this sale, which were not included in the auction. One of the main reasons for my purchase en bloc of these coins was to study their die stages and add this knowledge to what was already known. Amongst this group of coins was an 1834 B-3 in VF condition. It was noted on the envelope that it was an early die stage and had no cracks on the reverse. When I examined this coin more closely I found that rather than being an early die stage it was in fact the latest die stage I have found! Due to the wear the coin received, almost all evidence of the die cracks in the fields were worn away. Any die stage research that is done on lower grade coins should be suspect and taken with a grain of salt.

2. Relying on second hand information to determine a die stage.

Gathering second hand information versus personal observation can be detrimental. There is nothing better than having the coin in hand and examining it along with others to compare how one coin differs from another. Second hand information is always subject to another person's observational abilities. One person may overlook a particular item or actually see something that isn't really there. Damage, however minor, can be perceived as a die crack or hide the beginning or ending of one. Toning can also hide or create perceived changes. And let's not even discuss the possibility that they may have mis-attributed the die marriage! (We all know that Third Party Graders have made this mistake quite often) One almost needs to own the coin or have it in their possession to be able to do a credible die stage study. Even when you study a coin and think you have noted all the information it holds, a different person looking at it may see something else. So, two people looking at the coin and agreeing as to what is seen is preferred. Sometimes I also go back and re-examine a coin at a different time with fresh eyes and I am always amazed at the new things I discover!

3. Following the minting process in determining a die stage.

Unraveling the mint's handy work is a real challenge. One of the contributing problems of following the progression of die deterioration is lapping of the dies that were occasionally done during the striking process. As the working dies were used to produce coins, periodically they were taken out of the press to be lapped or dressed.

Lapping a die merely means grinding or re-polishing the die surface. Lapping was required to remove clash marks and smaller die cracks such as surface stress cracks, die rust or other anomalies including damage. Die clashes are reverse impressions of the opposite working die, that were impressed into one or both of the working dies when the dies were allowed to come together without a blank planchet present. This event can happen from the very first strike, or at any point in the die's life cycle. Occasionally dies were lapped to remove damage or minimize an error in the die face discovered after annealing or during the striking process. Continual or overzealous lapping of a die surface can remove additional device details in other areas such as the hair curls, eagle's feathers, arrow shafts, and other low relief devices. The "single leaf" die stages that are known on several bust half die marriages are one prime example of this. It can also enhance an area or allow a better strike to appear. While the lapping process can hide or remove key elements used in tracking die progressions, the removal of this detail can sometimes help in determining a die stage progression. Details, once lapped away, will not appear on later strikes so one can determine which coin was produced first. Along with other researchers, it is my opinion that the lapping process was the root cause for many of the different die combinations and die re-marriages that are encountered in all of the Bust series. As dies were removed from the press to be lapped, other dies were installed to be able to continue the striking of coins. If only one die was removed (either obverse or reverse) and another was put in its place, a new die marriage would occur. If the original die that was removed for lapping was re-installed and paired with the original opposite die, any consequent coins struck would constitute a re-marriage of the original dies.



Fig. 1
1807 B-1 EDS

A good example of how lapping can erase or retard a particular die stage is shown in (Fig. 1). Most collectors would think that this was a very late die stage of this coin. In fact this is a very early die stage of the 1807 B-1 Bust Quarter. On this coin we see a tremendous amount of apparent die cracks all over the obverse that have never really been fully documented (*There was a short description by David Lange in the JRJ Vol. 12/3, but only a line diagram was illustrated*).

These are not true die cracks, but surface stress cracks, which were completely lapped away and never returned throughout the rest of the life of this die.

How many coins were actually struck showing these light cracks and how often this happened in our early mint may never be known as very little wear would be required to erase the evidence of them.

Following along with our Bust Quarter theme, following are two examples of overzealous lapping as illustrated with the coins in figures 2 & 3 and 4 & 5.

In this example (Fig. 2), the die received some damage due to an unknown foreign object in the left side of the shield. (*note the raised die line from the lower leaf to the right foot of R in America*)



Fig. 2
1806 B-4

After the obverse die of the 1806 B-4 marriage was retired due to severe die breaks, the reverse die was lapped in an effort to remove as much of the damage in the shield as



Fig. 3
1806 B-3

Photo courtesy of Heritage Galleries

possible before it was re-married with the B-3 obverse. Consequently, this heavy lapping ground away the raised die line or graver mark while still leaving evidence of the deeper damage in the shield (**Fig. 3**).

In the next example showing the early die stage of 1806 B-9 (**Fig. 4**), note the full curls that are present below the E in Liberty and to the right of star 1, as well as the fore curls. The relationships of the position of E to the top curl and

Star 1 to the lower curls are used as diagnostics in attributing the die. As more coins were struck from this die, various anomalies occurred in the form of repeated die clashes and a heavy bisecting die crack. After a significant amount of these events the obverse die was removed and lapped.



Fig. 4
1806 B-9 EDS

As the die was lapped repeatedly to remove the die clashes and retard the die cracks that occurred, the coiner was a little overzealous and lapped away the curl details in the previously mentioned locations as well as the fore curl at the front of the hair above the forehead (see **Fig. 5**). This changed the look of the die diagnostics so much that Browning felt that it deserved a separate listing and it is one of only two examples of a die stage that has a separate plate. Browning stated that the changes are so severe that one might mistake it for a different die.

The examples listed above while only caused by lapping of the working dies, should constitute a

major enough change in the appearance of coins struck from them to warrant listings as a separate die stage. But shouldn't the reason for the lapping also be a different die stage? When the dies clashed and left their reverse impressions did it not create a distinct and different stage? In a perfect world it probably should. The reason this sometimes can't be listed as a separate stage might be that as the dies were clashed, then lapped to remove the clash, then clashed again, there may be no possible way to track or ascertain this progression. At the very least, when describing a particular die stage, the quantity and presence of die clashes must be noted. Even if one believes that he has a complete understanding of what events took place and in what order they took



Fig. 5
1806 B-9 LDS

place, it is probable that more has occurred than what can readily be seen. As in the first example shown, if a die crack occurs on a die that also has a clash and then is lapped to remove the clash, the die crack may appear to a lesser degree or be removed entirely.

4. The examination of a small or limited amount of coins.

As with any research, the more examples examined the more accurate the end results. One coin exhibiting a particular event or stage is not necessarily conclusive proof of a die stage. Another example showing the same event has much more validity. If a stage has advanced rapidly then only one example may have been produced and really... should this constitute a separate listing? How could anyone hope to collect such a list of these unique die stages? If the event occurs across a length of time shown on multiple coins then it should warrant a separate die stage listing of it's own.

5. Die stage rarity is inconclusive.

Many collectors and researchers work very hard to determine rarity ratings for die marriages, die re-marriages and die stages. Along with auction appearances, coins for sale on fixed price lists and coins examined at coin shows, individual collectors inventories are also added together to produce a combined total of known pieces. While this is a great start towards a definitive answer as to rarity it should still be suspect, as many collectors don't share information and prefer to remain anonymous. Coupled with this are the many examples that are owned by collectors who don't examine them as to die stage, as that is not their collecting focus. These examples reside in date sets, type sets and older collections that have been off the market for many years and may have never been in a public auction to be tracked. Collectors also tend to hoard interesting die stages of which duplicate examples may not be counted. Again, don't take any stated rarity for granted for as soon as a new die stage is discovered and revealed to the collecting community other collectors will begin looking for them. With the increased interest more examples are bound to appear. Only after many years of intense pursuit by multiple collectors can one begin to understand the true rarity of a particular item.

At this point we still have not reached any final decisions as to the labeling of the die stages in reference books and in our own collections. Let's look at an overview of the possible ways to do this. For our example let us use the Bust Half series as this is a widely collected series of both die marriages and die stages.

Example: 1812 O-110

Currently there are three distinct die stages for this marriage listed in Overton.

#1

- 1812 O-110** (considered the earliest or "prime" die stage)
- 1812 O-110A** (a later stage which encompasses a reverse die crack and worn dies)
- 1812 O-110B** (the latest observed stage showing heavy lapping which has removed leaf details creating a "single leaf")

An alternate way to express this same progression

#2

1812 O-110 DS-1 (Die Stage -1) (considered the earliest or “prime” die stage)

1812 O-110 DS-2 (Die Stage -2) (a later stage which encompasses a reverse die crack and worn dies)

1812 O-110 DS-3 (Die Stage -3) (the latest observed stage showing heavy lapping which has removed leaf details creating a “single leaf”)

Another alternate way to express the same progression

#3

1812 O-110 EDS (Early Die Stage) (considered the earliest or “prime” die stage)

1812 O-110 MDS (Mid Die Stage) (a later stage which encompasses a reverse die crack and worn dies)

1812 O-110 LDS (Late Die Stage) (the latest observed stage showing heavy lapping which has removed leaf details creating a “single leaf”)

Another alternate way to express the same progression

#4

As a fourth example, one other possible way to describe a die progression is how they were listed in the latest reference published for the silver bust coinage, the Half Dime series, in *Federal Half Dimes 1792 - 1837* by Russ Logan and John McCloskey. The authors chose not to break the die stages down into any defined separate numbered or lettered listings. Instead, they combined these stages into one paragraph, listing all deteriorations seen and in the order that they believed they occurred. While this eliminates any need to determine which stage a coin might be, it also eliminates a defined subset of coins one can collect within a given die marriage. As we all know we are “nuts” about these coins and as collectors any additional way to collect is preferred!

In the four examples listed above, only the third one solves the problem of what to call the discovery of a coin showing attributes later than one of the stated stages but earlier than the next. If a coin is not the EDS or the LDS then it should fall into the MDS category. But still, what if a truly significant change in the die is discovered which collectors would want to acquire? For this scenario the preferred method would be the second one as stages can be added indefinitely and the die stage numbers (DS-1 etc.) can be numerically shifted as new examples are discovered and defined. As shown in the first example, using letter designations would cover most listings of die stages as well, but shouldn't the first stage known or the “prime” die stage be listed as the “A” model?

Every die has a “prime” stage, but this stage may encompass some sort of die degradation, many of which began in the die preparation process. During the punching of devices into the die and heating and annealing of the dies, stress points and weak areas may develop. These points may already show up as a die crack before a single coin is struck or may develop a crack as the first coin is produced. Clash marks could also be produced with the very first strike if a planchet fails to be fed into the striking chamber. Along with this reason the first stage listed should always be listed as either “A” or “1”.

Further, stages are progressing at different rates for the obverse and the reverse. While a die crack may begin on one side of the coin nothing may happen on the other or a die crack may complete from one point to another. Separating each side and listing what occurs will not necessarily show how the stages of each die overlap. When cataloging or listing each side of the coins stage, reference to both would be preferred.

The following fictitious example is a proposed scenario to describe these progressions.

DS-1: *Obverse perfect; Reverse perfect.*

As an event occurs a new die stage is listed, such as:

DS-2: *Obverse die crack from rim to star 1; Reverse perfect.*

Listing of a new die stage should commence when any new event occurs even if a previous stage has not completed, such as:

DS-3: *Obverse die crack from rim to star 1; Reverse die crack across tops of United.*

As the progression continues the next stage to list could be at the completion of an event such as:

DS-4: *Obverse die crack from rim to star 1, across field to drapery; Reverse die crack across tops of United.*

A final or latest stage seen might be listed as such:

DS-5: *Obverse die crack from rim to star 1, across field to drapery; Reverse die crack across tops of United to first S in States; both sides show clashing.*

So, in listing a coin according to die stage one must list the year, die marriage and the die stage. The following would be an example for a Bust Quarter. **1818 B-4 DS-3**

Conclusions:

Along with the pitfalls listed in this article there are several proposals - from the proper use of terminology when describing die stages to different ways of categorizing them. It is my hope that some note of reason has been included with these suggestions and from now and into the future they will be embraced. Unfortunately, until such time as all writers, collectors and the numismatic community as a whole can agree on a method and proper terminology for die stages, collectors are on their own in determining what to call specimens they discover and which stages to pursue or collect. I hope that the ideas listed here will provoke some new thoughts on this subject, be they good or bad, and I would be interested in hearing those thoughts.