

# FARID, FRACTALS AND FINGERPRINTING: NEW FINE ART AUTHENTICATOR TECHNOLOGY OR PSEUDOSCIENCE?

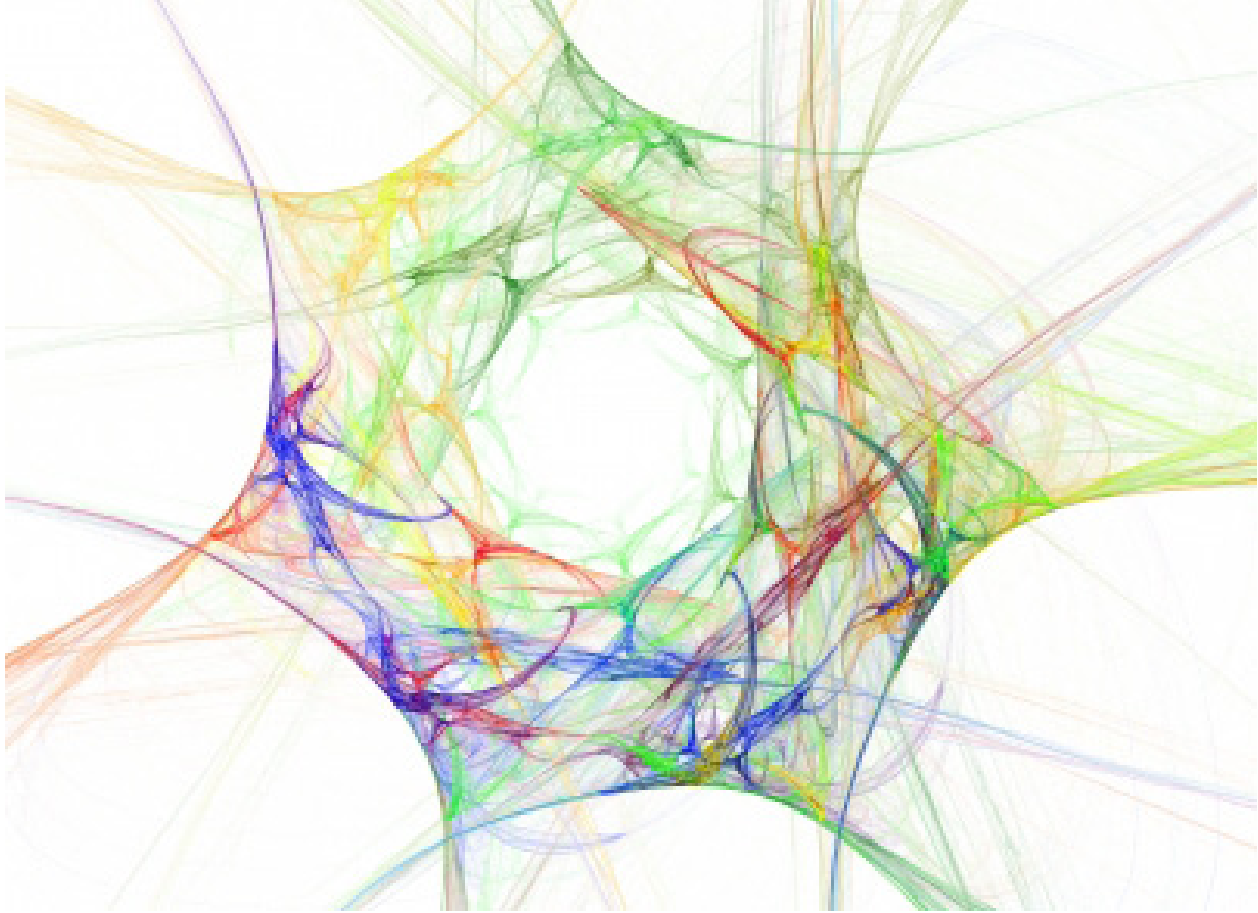
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## Introduction

After centuries of having fine art authenticated by so called art connoisseurs, there is a movement toward a combination or interdisciplinary approach to authenticating fine art.

Case law, IRS regulations, insurance processes and newly emerging industry standards make it clear that a consensual and scholarly approach of science, provenance and connoisseurship must be used to authentic a work of fine art. New digital

technologies, driven by the computer revolution and scientific practitioners, are proposing new methods in ascertaining what constitutes “coming from the hand of the artist.” The issue with these so-called scientific digital approaches is that it is not really established that they are grounded in science and that in some cases a significant dose of hocus-pocus or pseudoscience has not crept in.



### **Farid and Stylistic Analysis**

**D**r. Henry Farid of Dartmouth College recently completed a study which focused on a digital examination of one-inch images supplied by museums of various Peter Breugel paintings. His findings, via what he calls “wavelet analysis”, or an extreme case of statistical and mathematical analysis, confirmed what art historians called authentic and inauthentic. Farid maintains that his work is similar to Fractalism developed by Dr. Richard Taylor. Farid and Taylor both maintain that science can extract points of style from an artist’s work via computer and statistical analysis.

In terms of Farid’s approach, using one-inch images supplied by a museum to statistically analyze, and from the analysis draw conclusions, is logically and empirically problematic. Taking a part of an object and drawing conclusions about the whole of the object is bad logic. Such an approach draws in the fallacy of composition which states that assertions based on this fallacy are specious. Just because one bolt of a automobile motor is light does not mean that the whole machine is light.

The use of supplied images rather than the investigator himself securing the images is

questionable since the supplied images may have been manipulated, or mistakenly taken. Did the curatorial staff supply the images? Did the images follow specific protocols in scientific photography? Or did the chief custodian take the photographs? Allowing others to provide the photographs of an object of scientific study would be akin to a police investigator allowing bystanders to a crime scene investigation to hand over the robbery gun or knife. The problem with stylistic analysis is that artists change style, or that hand which drives the style might undergo changes brought about by physical atrophy, disease, or accident, creating change in the way the work is completed. The notion that an artist’s style is unchangeable surely misses the mark since it is almost universally accepted that what they produce during one period of their life is not always the same as what they do during other periods of their life.

### **Fractal Analysis and the Art of Jackson Pollock**

**O**ver the last year, Fractal Analysis has been used to de-authenticate recently discovered works attributed to Jackson Pollock. Rather than following the normal authentication protocol of

scientific analysis of the materials of a given work of art, provenance, and connoisseurship, the Pollock-Krasner Foundation utilized the work of Richard Taylor, a physicist specializing in analyzing fractals. A fractal is a structure developed by nature which moves in unpredictable patterns and depths. Examples of fractals are retinal veins, bare trees, coastlines, electrically observed energy, and so on. Fractals are measured by their “D” values. A cloud fractal has a low “D” value; bare trees with many branches have high “D” values. Values, according to Taylor, range from 1 to 2. Cloud values move between 1.2 and 1.5. Bare trees move between 1.5 and 1.9. Taylor derives his values by placing a grid over a picture of a fractal and the more a fractal fits into a square of the grid the higher the “D” value.

Taylor notes that Pollock’s drip works resemble fractals and maintain “D” values of between 1.6 and 1.9. The dripping, splattering and building of paint on Pollock’s giant canvases resembles nature in her largeness and built-up surfaces. According to Taylor, Pollock created these fractals intentionally, and intuitively. He knew that he was following nature’s fractals, and created these works not in a chaotic fashion but as creations of man reflecting nature’s indeterminacy. According to Taylor, there is an aesthetic compatibility between Pollock’s later works and fractals and the way to authenticate such works is to measure them as fractals. Taylor’s recent fractal analysis of the twenty-four works indicates that since the “D” values are too low, the works are not authentic.

Taylor’s new approach to authenticating fine art leaves much to be desired. To begin with, some of his studies do not present well in terms of replication, format, statistics and conclusions. In any scientific study, the investigator must provide the steps and data used to carry out the study. This protocol allows other investigators to confirm or challenge the results of the first study by following each and every step. The more confirmations, the stronger the study. In his study of using fractals as stress reducers, Taylor failed to provide these steps and as such his study cannot be verified. In point, his failure to provide the steps and the data in his methodology leaves the study

results questionable. As far as using an “Analysis of Variance” (ANOVA) statistic to analyze relationships, Taylor apparently used the wrong tool. ANOVA tests whether means of different groups are different or the same. For example, if a researcher wanted to find out if the average test scores between three schools are the same or different, the researcher would use ANOVA. Testing for relationships or correlations. In terms of Pollock knowing something about fractals, or having an intuitive understanding of them, Taylor provides no evidence that this is the case. That Pollock intentionally created fractals rather than another form of abstract art – again no evidence is provided. Knowing that Pollock was suicidal and prone to drinking, it is doubtful that much thinking or intention could be concluded from his works. One is almost forced to argue that these works were binge or stupor works rather than intuitive or intentional.

As far as fractals are concerned, one questions whether the subsuming of the examples of coastlines, bare trees and their branches, electrical energy displays and so on under the banner of fractals represents a genuine category. For example, we can assign the category of man or woman by providing definite criteria such as voice, muscle and sexual manifestations. These criteria are universal and do not change. Coastlines change, and trees blossom to the point that in full bloom they no longer are identified as fractals. This leads to an entity (i.e. tree in winter) being considered a fractal while in summer it becomes a non-fractal. It is both an “X” and “Non-X”. Fractals, in this case, become logically meaningless. To be an X and not to be an X is a logical contradiction. Here, one may argue that fractals have definitional problems. As far as a fractal aesthetic is concerned, bare trees, coastlines, electrical energy displays somehow don’t quite fall into an aesthetic category. I would argue that they are far from it.

The fractal as the authenticator, or let us say the “D” value authenticator and its application to Pollock’s works, seems to miss the point that, in addition to providing a value, Taylor has also set the standard sample reflecting that value from a particular set of works. Taylor notes that while some of Pollock’s works meet this standard, others do not. In particular, his



early works fail, and his later works pass. The objection here is that Taylor does not tell us why or how this standard was applied, except perhaps to say “because I said so.” The application of the high “D” as the standard or the fact that within the grid more quantity is found in later works raises an interesting question of “What exactly is contained within the grid?”

As it turns out, the grid is full of dark matter similar to the matter from bare trees. The bare tree, and Pollock’s dark grid pattern (filling in his grid and of a similar “D” value), are said to resemble one another. It is here that Taylor argues that works that do not match this resemblance are not the works of Pollock. Two mistakes are made here by Taylor. Taylor forgets or is unaware of the fact that some artists change their style as they get older. For example, two artists from the New Hope School or the Pennsylvania Impressionists are recognized for their landscapes but changed as they aged: Edward Redfield went into rugs and wooden sculptures, and Charles Rosen went from landscapes to abstract art. Thus to argue that such later works are inauthentic, since the standard of landscaping, or the landscaping “fingerprint”, is absent, is to argue falsely.

Merely because some of Pollock’s works fail to meet the high “D” value of his later works does not mean

they are inauthentic, but that they are stylistically different. The second mistake is that while the grid picks up the dark matter and provides a value, the failure of picking the lighter matter – and Pollock’s works contain much white paint – says that Taylor’s fractal analysis is only using parts of the work to judge for authenticity. This approach is tantamount to studying for authenticity in given works by choosing only given areas and arguing that the other areas have no significance. More importantly, as more lighter areas are placed in the grid, the “D” value becomes higher and is no longer considered a fractal.

A significant attack on fractal authentication is that fractals can be developed via the computer as doodles and satisfy Taylor’s high grid values. Kate Jones-Smith, a doctoral physics student, and Harsh Matur, her physics professor, state that the Smith doodle, having satisfied the Taylor criteria as a fractal, proves that Taylor’s work is flawed.

### **Fingerprint Analysis**

**A**nnoted fingerprint analyst and fingerprint forgery expert stated that fingerprint analysis is more of an art than a science. Stated differently, if fingerprint analysis is more of an art than a science, it is not a science. The issues moving fingerprint

analysis outside a scientific protocol are theory and practice. Theoretically, there are no standards for utilizing a fingerprint. Some agencies use ten areas of a fingerprint while others use fifteen. Matches occur when a sample is continuous with one understudy. The fact that there are *fifty* areas that could possibly be matched and only ten or fifteen are used, means the probability of a match hovers between 20 and 30 percent. This is not a good probability of reliability. It has also been noted that the technology behind the analysis is about 100 years old with no new protocols being established to make it rigorous. It has also been noted that since police organizations carry out the analysis, it is biased and political.

In a recent instance where fingerprint analysis was used to authenticate a work, Wertheim's art concept was clearly demonstrated. A so-called expert in fingerprint analysis (it is required that any individual engaged in fingerprint analysis be certified and no evidence was provided that this individual was) took the use of fingerprint analysis way beyond the norm. It was alleged that the print on a painting which was thought might be by Pollock matched a print found on a can of paint in Pollock's studio. In any fingerprint analysis a certified sample of an individual print must be provided first so as to secure a "match." The so-called expert used a print found on a can in the artist's studio. The problem here is that the paint can print could have belonged to anyone, not necessarily Pollock. In any scientific study, the rule of replication prevails. Records must be provided every step of the way so that other investigators may replicate the study to verify the results provided by the original investigator. The so-called expert refused to provide records of the study or access to the fingerprint. In

fingerprint examination, protocols demand that, for a fingerprint match to be valid, other certified fingerprint experts must confirm the match. This practitioner did not satisfy this protocol.

A few basic problems underlie the use of fingerprints by a fine art authenticator. Unless a certified sample print is available to match a print under investigation, logic demands that no conclusions be drawn about the questionable print. One cannot yell "match" if no match print is available. Even if a match is available, one must question where the print is located. If it is on the back of a canvas, maybe it was only a purchased or touched work. The artist perhaps handled the canvas but did not carry out the work. If it is on the front embedded in the paint, was the work merely examined by the artist but carried out by a student? Even if a match is found, all it can ever prove is that the artist touched the canvas.

Fingerprints, fractals, and stylistic computer analysis are interesting attempts to bring fine art authentication into the 21<sup>st</sup> century. However, weaknesses in not understanding the nature of the artist, and failures in not following the accepted protocols in scientific investigation – such as record keeping as it pertains to study replication, investigator control of the process, openness, use of statistics and developing logically valid conclusions – make such attempts unsuitable as scientific approaches. Science demands rigor – not magic, preaching, art or politicking. When science becomes entrenched in poor methodological processing, improper use of statistics and faulty logic, it becomes pseudoscience. ✍



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