Why I liked Jackson Pollock

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> "Myths spring up about certain charismatic artists, myths so powerful that they hamper our ability to see them clearly. It took the better part of a century for us to recognize that Van Gogh was a highly conscious, highly intelligent artist working with very specific intent. With Pollock, we have been similarly blinded. He has been presented to us as a suffering, tortured, violent, speechless, dumb brute of a man, blindly, almost unknowingly pouring forth his anguish upon the floor. We stress his angst, his drinking, his unresolved personal problems. Living in an era of psychohistory we analyze and dissect. We try to find out who our subject really was - as if that were possible! - rather than focus upon what he did[1]."

Forty years ago, when I was an undergraduate math major at Rutgers, my friend Mike and I used to occasionally go to New York to wander around the Metropolitan Museum of Art. Neither of us had any background in art. My total exposure to art criticism probably was from *Time* magazine which I used to read because I liked its negative wit. I remember the two of us standing in front of the Jackson Pollock and agreeing that we both liked

[1] [Gal90, page 11]

it, but we could not explain why we liked it. We were not alone in this. Although Pollock's work was controversial and roundly denounced by some, there were many artistically uneducated members of the general public who did like it.

I do not remember any color field paintings in the Metropolitan and I did not get to see any of this genre until some years later. Indeed, I have only learned the term "color field" in the last few months. I did not have the same reaction to these paintings as to Pollock. I did and still do find them trivial and boring. I am not referring here to the often voiced complaint that anyone with a paint roller and a can of Sateen Dura-Luxe [Von87, page 20]could produce them. I am instead referring to their intellectual content. For me they are just sugar free eye candy. To try to explain and justify this difference, I need to take some side trips.

In 1977, Benoit Mandelbrot published his classical book, *The Fractal Geometry of Nature* [Man77]. He opened the book with the question "How long is the coastline of Britain?" Let me go into a little detail. A smooth curve is one with no sharp angles. One could measure the length of a smooth curve with a pair of dividers. If one were to set the points of the dividers at 1/4 inch apart, and then step off the curve in 20 steps, one could say that the length of the curve was around 5 inches. If one were to then set the dividers at 1/8 inch and step off the curve again one would have a more accurate measurement. Even if the curve was mostly smooth, but had just a few isolated corners, this process would still work. We could say that measuring the length of the curve with the dividers set at h units apart gives its length at scale h. It has been known since the beginning of the 18^{th} century that for a smooth curve, the length at scale h converges to a definite number as the scale converges to 0. This number is then defined to be the length of the curve.

Mandelbrot looked at three published attempts to determine the length of the coast of Britain in this manner. You take a big map of Britain, and step off the coast with a pair of dividers. The three cases he studied had all used different scales and did not give anything that looked like convergence. A smaller scale seemed to give a much larger value for the length of the coast. In other words, it appeared that the measured length was converging to infinity as the scale went to 0. Mandelbrot's radical proposal to explain this paradox is to assume the coastline is not smooth; rather every single point on the curve is a corner. The formal mathematical name for this is "a nowhere differentiable curve". He and his followers have gone on to propose

that all curves and surfaces of nature should be considered to be nowhere differentiable. "Nature abhors smoothness."

Using Mandelbrot's ideas people have been able to make believable computer generated images of all sorts of things including clouds and the topography of imagined alien planets. In the case of clouds there is an alternative method that might be tried. The partial differential equations for compressible fluid flow routinely used by super computers to generate our daily weather forecasts can be used to try to move a cloud across the computer screen. By their very nature differential equations can only be applied when you are assuming the data can be represented smoothly. In this case, they fail miserably to produce a realistic image. This tends to indicate that confusing, erose jumbles are not only a part of nature but are an essential part of it.

Mandelbrot also applied his mathematics to plant life. In the 1880's, Georg Cantor discovered something many mathematicians took to be a grotesque monster, a one dimensional curve with no crossings that covered every point in a square. All such curves are necessarily erose and jagged. Mandelbrot proposed that they can be found in nature. He remarked that every drop of rain that falls has to have a path to the sea, so that the drainage system must completely cover the surface of the earth even though it is a one dimensional network. He also noticed how trees and bushes in summer seem to have an outer surface. This means that their branch structure is another space filling curve, and so must be erose and jagged. For technical details, consult [Man77, Chapters 16, 17]. When we look at an actual forest and find it beautiful, part of what we are finding beautiful is just this confused complexity which we might take for chaos, but it is not chaos. It is just nature conforming to the laws of mathematics. The mathematical subject of chaos theory is not actually about chaos, it is rather about finding mathematical structure in what might seem to be pure chaos.

> "The 'natural pulchritude' of the earth, declared a Suffolk clergyman, Erasmus Warren, in 1690, was made up of such things as Art would call rudenesses; and consists in asymmetries and a wild variety. . . That roughness, brokenness and multiform confusion in the surface of the Earth, which to the inadvertent may seem to be nothing but inelegancies or frightful disfigurements, to thinking men would appear to be as the turnings and carvings and ornamental sculptures that make up the lineaments

of nature, not to say her braveries." [Tho83, page 259]

Not everyone has my tastes. Some people choose to live in suburban McMansion complexes which do everything they can to paper over wild nature. Straight lines abound. The edges of the grass are carefully maintained with an edger and the geometrically laid out shrubs are all surrounded by pine bark mulch. Of course, they have only smoothed out things at the scale of human perception. At much smaller scales, things are just as erose as in the forest. I find these modernist developments ugly. I like the jumble of wild nature.

The word "abstraction" has many different uses and certainly seems to mean something different in mathematics from what it means in art. In mathematics, an abstraction has to be an abstraction of something. For instance group theory is an abstraction of various algebraic structures studied in the 19^{th} century. That means that group theory ignores all the particular details that make these structures different and considers only what they have in common. This use of the word is far more moderate than the equation between abstraction and extreme modernist reduction lying at the heart of color field theory. However, the less extreme use of the word does apply to much art. Cézanne has said that the natural forms are fundamentally spheres, cylinders, and cones. For him these forms are the essential inner structure of nature and he had to eliminate the extraneous detail of all that jagged complexity in order to show this. His paintings have corners, but only isolated ones. A Cézanne is made up from smooth patches with the corners only occurring at the boundary between different patches. I am thinking here especially of his paintings of Mont Sainte-Victoire.

This just goes to show that one person's details can be another person's essential core. I claim that what Pollock did was to throw away the inessential details of form and space in order to concentrate on the inner core of jagged complexity. Some art historians have theorized that the inspiration for Pollock's famous jumbles are the swirling seaweeds he saw on the Long Island coast while he was out harvesting mussels. This would explain why he deliberately added the background last. For in real life it isn't background. It is the surface of the water which does come in front of the vegetation. I know that his paintings remind me of bare bushes and trees one sees in late fall and winter. I have a series of color photographs illustrating this which I have called *variations on a theme suggested by Jackson Pollock*. Of course, a photo cannot do justice to the erose texture of the actual surface of a Pollock.

I suggest that the reader go to the National Gallery or the Metropolitan and view *Lavender Mist* or *Autumn Rhythm*. The originals support my claim better than the small scale reproductions one can find in books. A good abstraction should apply to cases that were not part of its original conception just as there are many more kinds of groups than those studied in the 19^{th} century. Some people have said that Pollock was painting pure chaos, but I don't see chaos in his paintings, I see the same mathematical structure as the space filling skeletons of living flora.

So what were Mike and I responding to forty years ago? I think it was just that Pollock captured the aspect of nature that I find most appealing. Why do I find the color field paintings so objectionable? I think it is just because they represent the denial of wild nature found in so many modernist real estate developments. Pollock seems to have agreed with this assessment of modernist landscaping. In 1950, one of his Long Island neighbors had a huge, perfectly flat lawn. "It was a formal mansion set on a vast, unbroken expanse of lawn. ... 'Did you ever see such a lawn' Jackson gasped? '... It's a god–damn green canvas. God, I'd like to paint on that.' Later the same summer, after several days of rain and drizzle, he drove back to the Seligson house and onto the lawn. The Model A's tires sank deep into the soggy grass, leaving long mud ruts in the green perfection" When confronted by the Seligson's demanding payment for the damage, he offered to return and sign it adding "then you can pay me." [NS89, pages 621-622]

In *Landscape and Memory* [Sch95], Simon Schama devotes a whole book to discussing a passage in Thoreau. Thoreau claims that while standing in the wilderness next to Walden Pond, he was having exactly the same experience as Native Americans 5000 years ago. Schama disputes this claim at length. His argument boils down to claiming that Thoreau with his classical education cannot discard the baggage of 50 centuries of Western Civilization. However, Pollock *was* able to discard this baggage and paint nature as no-one in the history of Western art before him had ever done. (Although it would be far-fetched to imagine that he was able to also acquire the millennia of Native American culture needed to see nature as a Native American.) After Pollock, it is even harder for the rest of us to see nature unfiltered by our cultural heritage. If any sense can be made of the phrase "American action painter", it is this. His youth in the truly wild American West taught him to see nature unencumbered by the prejudices of a classical education.

I cannot entirely agree with some things others have said about Pollock. First, I have heard it said that it is important to understand that Pollock

painted his canvases while they were lying flat on the ground, but we see them hanging vertically on the wall. I think there is an important point which this comment misses. When I look at a photograph, it makes no difference whether is is flat on the kitchen table, in an album on my lap, or hanging on the wall. What is important is the angle at which the photo was taken. In photography, it is not all that rare to see a shot taken looking nearly straight up or straight down. This is not the case with painting. I cannot even think of a pre-1945 painting which did not have the viewpoint of someone looking through a vertical window at a real or imagined world. Pollock's paintings on the other hand have no obvious viewing angle. This is something else he removed from his pictures along with form and space. That for me is the important point.

Another point which I find off the mark is the whole theory of "action painting", the view of Jackson Pollock as the wild man from Wyoming who pissed in Peggy Gugenheim's fireplace. The critics who propound this view have missed the true source of Pollock's appeal and have had to search for some other explanation, however far-fetched. For them the actual painting is not as important as the wild process by which it was made. Photographers went to Pollock's studio to record him at work, thus making their photos more important than the actual paintings. This goes completely against Pollock's own statement that his paintings were not done with wild abandon, but rather with complete control of his materials. In fact, he returned to booze during one such shoot. In their biography of Pollock, Naifeh and Smith document how Pollock hammed it up for the camera, deliberately creating an image calculated to sell paintings and then succumbing to a period of dark self-loathing over his phoniness [NS89, pages 618-621]. I can say for sure that this theory cannot explain why Mike and I liked *Autumn Rhythm*.

Finally, the point with which I am in the most disagreement is that the importance of Pollock's paintings lies in the "fact" that they are flat and refer to nothing outside themselves. Literally speaking, these paintings are not flat. I just came back from a trip to New York where, inspired by this essay, I broke my usual habit of going only to photography exhibits, and went to see *Autumn Rhythm* after a 40 year hiatus. I fail to see how anyone actually looking at it can find it flat. Another Pollock painting from 1950 is *Lavender Mist* at the National Gallery of Art. Its surface texture is extremely erose. This is not an accident. The mathematical concept of Hausdorff dimension had been around since 1919 [Hau19], but it was only applied to natural objects in [Man77]. It is a concept of dimension not

limited to integer values. The full import of my claim that Pollock was trying to capture the nowhere differentiable character of nature is that he was trying to draw things with Hausdorff dimension strictly between 2 and 3 and that in doing this he actually tried to make the surface of his canvas have dimension between 2 and 3. This of course is not a claim that Pollock ever thought of his work in these terms. Rather he was able to see and capture artistically things which Mandelbrot understood mathematically. I think it a real shame that so much of the art of the last forty years has been based on Clement Greenberg's complete misunderstanding of Jackson Pollock. Pollock, always aware of the necessity of selling pictures, sometimes paid lip service to Greenberg's theories. For instance, "[the image] is extra cargo–and unnecessary." But he continued, "Recognizable images are always there in the end. [NS89, page 591]."

Let me finish with a very brief remark about why I think it important that ordinary people can appreciate Pollock. The role of the *avant-garde* is to push forward the leading edge of knowledge. It is really unimportant that most *avant-garde* ideas are silly. That is to be expected. The silly ideas are quickly forgotten and we are left with the very few important things among them. One could say the *avant-garde* is like the frothy turbulence at the crest of a wave. I think ordinary people are the wave itself.

References

[Gal90] Gagosian Gallery. *Jackson Pollock : black enamel paintings, April-May 1990 / with an essay by Ben Heller*. Gagosian Gallery, New York, 1990.

[Hau19] F. Hausdorf. Dimension und äusseres mass. *Mathematische Annalen*, 79, 1919.

[Man77] Benoit Mandelbrot. *The Fractal Geometry of Nature*. W.H. Freeman, San Francisco, 1977.

[NS89] Steven Naifeh and Gregory White Smith. *Jackson Pollock: An American Saga*. Clarkson N. Potter, Inc., New York, 1989.

[Sch95] Simon Schama. *Landscape and Memory*. A.A.Knopf: Distributed by Random House, New York, 1995.

[Tho83] Keith Thomas. *Man and the natural world: a history of modern sensibility*. Pantheon Books, New York, 1983.

[Von87] Kurt Vonnegut. *Bluebeard*. Delacorte Press, New York, 1987.