a Newtonian viscous fluid, for which the shear rate is proportional to the shear stress. But paint is a complex non-Newtonian fluid that does not satisfy this linearity requirement.[1] Experiments with a cylindrical wooden rod initially dipped into a container of ordinary wall paint can readily show that the scaling relations do not conform with observations.

For a video showing the formation and shape of Pollock's paint jet, see http://www.youtube.com/watch?v=ajZCjlxv7GI. Observe that the shape of an actual jet does not conform with the theoretical shape shown in figure 4b of the article, because the authors drew the figure without taking into account that paint also is an incompressible fluid. This property implies that the initial radius of the jet is smaller than the radius of the rod, as observed in the video, instead of larger, as shown in figure 4b.

Reference

1. V. N. Constantinescu, *Laminar Viscous Flow*, Springer, New York (1995), p. 26.

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My compliments to authors Andrzej Herczyński, Claude Cernuschi, and L. Mahadevan on their quantitative analysis of Jackson Pollock's painting technique. The article offers welcome insights into his creative process and artistic achievements. I was especially pleased that the authors explained why the term "drip painting," commonly used to characterize his preferred method of deploying viscous material, is both incorrect and misleading.

I was somewhat puzzled, however, by the authors' choice of the word "trowel" to describe Pollock's favorite paint applicator and by their use of it interchangeably with "rod" and "stick." He did mention using a trowel, but he generally applied fluid paint with hardened brushes—he said he used them "more as sticks rather than brushes." Surely a trowel (from the Latin *trulla*, meaning "ladle") would hold much more paint than a rod or stick. The authors failed to note that Pollock also painted with flexible, soft-bristle brushes, from which the material flowed very differently than it would from a stiff stick or hardened brush. Even more curious, they never mentioned his well-known use of basting syringes, which dispense a lot more paint than do either sticks or brushes and therefore give a much longer line; they also produce squirts that have their own kind of trajectories and velocities.

Examples of Pollock's paint applicators are preserved and displayed at the Pollock-Krasner House and Study Center (http://www.pkhouse.org) in East Hampton, New York. The artist's former home and studio, it now belongs to Stony Brook University. The collection also includes many still photographs and three motion pictures that show Pollock using the tools and materials in question. I think the authors would have benefited from examining those resources at the museum, where the paint-covered floor of Pollock's studio vividly testifies to the variety and dynamic character of his technical innovations.

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Herczyński, Cernuschi, and Mahadevan reply: Since our primary aim was to invite readers to consider very simply the physics of pouring paint, we modeled paint as a Newtonian liquid. That model, as Michael Nauenberg writes, assumes a linear relation between the stress and the strain rate. Paint, a suspension of pigments and polymers in a solvent, may indeed exhibit nonlinear rheological characteristics. Taking that into account would lead to slightly different relationships than those we propose, but many of the qualitative features—for example, the coiling patterns on the substrate—would remain the same. However, effects due to elastic stresses, surface-tension gradients during drying, and so forth are not included in our description. We should have clearly noted the caveats of our minimal approach but are glad to have the opportunity to do so now.

Nauenberg also claims that our qualitative sketch of a thinning paint stream is inconsistent with observations. In fact, the shape of a draw-down jet is controlled by the competition between viscous and gravitational forces via the dimensionless parameter $\mu^2/\rho^2 g R^3$, where R is the radius of the jet at its origin, μ is the viscosity, ρ is the density, and g is the acceleration due to gravity. For highly viscous paints, the parameter is large, and thinning would be relatively gradual as a result.

Helen Harrison is correct to point to Jackson Pollock's wide range of implements, such as brushes of different bristle types and basting syringes. The artist kept experimenting and exploited many other techniques, even occasionally imprinting the canvas with his