

The Artist and the rock

Windows Through Time

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When you are a geologist you never really get the day off, especially if you have an eagle-eyed wife. Recently this became very clear to me, or I should say to us. Johanna and I were supposed to be just enjoying the scenic views at the Olana State Historic Site. That's the estate of the great 19<sup>th</sup> Century landscape artist Frederic Church. The scenery there is well worth the effort of a visit. Frederic Church was not just a painter of landscapes; he designed them as well; he was a landscape architect. The more than 250 acres of his Olana estate are dotted with what he called "planned views." Church chose locations for their scenic potential and then designed where the driveways and trails would be placed, or cleared the forest to maximize the aesthetics of the views. He made Olana a work of art and spent about 30 years doing it. Johanna and I just wanted to go and see some of them. Well, we did.

One of the best planned views is the westward panorama which today overlooks the Rip Van Winkle Bridge. This site was cleared of trees in Church's time but had become overgrown since. A few years ago they opened up the view once again and they have placed prints of some of the painting that Church did from this perch. It is a very lovely place to go and just sit and look. That's what I was doing, but Johanna was being a little

less aesthetic and a little more analytical. All of a sudden she tugged my sleeve and said “look at that.” I did.

There, before us, was a rock. Not just any rock but a pretty good sized one. It must have measured three by four feet in size and that would make it pretty heavy too. I took a good look at it and this boulder quickly became a lot more than just some run-of-the mill rock. It was composed of quartzite; that’s a form of quartz sandstone which has been subject to a lot of heat and pressure, probably during one or more mountain building events. It would have been heated up and, essentially, cooked. That doesn’t change quartz sandstone a whole lot, but it would have made this a harder and maybe a little denser sort of rock.



It didn’t match any lithology that you would ever find at Olana; there is no quartzite here or anywhere near here. I have had to ask around about it, and nobody is sure where exactly it came from, but quite possibly, it came from somewhere in the

Adirondacks. Those mountains have gone through several episodes of mountain building and their rocks have been cooked a great deal. There are a lot of quartzites in the Adirondacks.

So, what was this boulder doing at Olana? That's a long way from the Adirondacks. Actually, that question was the easy part. This boulder is something called an erratic, specifically a glacial erratic. It really might have hailed from the Adirondacks. If so, then it had been picked up, during the peak of the Ice Age, and transported by advancing glaciers. It's a big, heavy rock but the glaciers were thousands of feet thick and very well equipped to carry something like this even for hundreds of miles of transport.

All this made a lot of sense to me. Back, earlier in the year, I wrote another column about Olana. In it I made the case that a great glacier had, back during the Ice Age, overrun the hill here and sculpted it into the smooth, curved morphology that it displays today. It was a time when the climate was cycling between warmer and colder episodes. Glaciers had advanced down the Hudson Valley several times. Each advance was followed by a melting and a retreat, and then another advance. But each readvance would have been perfectly capable of transporting boulders. And that would explain why we see rocks like this. There are a lot of them; once you take notice, you see them everywhere. Like the one at Olana, they almost always do not match the local lithology; that's what is erratic about an erratic.

If you are interested, I can show you this rock. I will be doing a Hudson Valley Ramble at Olana on Sunday, Sept. 20<sup>th</sup>. We will meet at the visitor's center at 1:00 and spend

about two hours hiking around the estate and looking at the evidence for its ice age history.