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NATIONAL GEOGRAPHIC

THE MONSTER STORM

The greatest storm chaser, Tim Samaras devoted his life to unlocking the mysteries of extreme weather.

Then came the tornado of May 31.

Samaras deploys probes in 2003.

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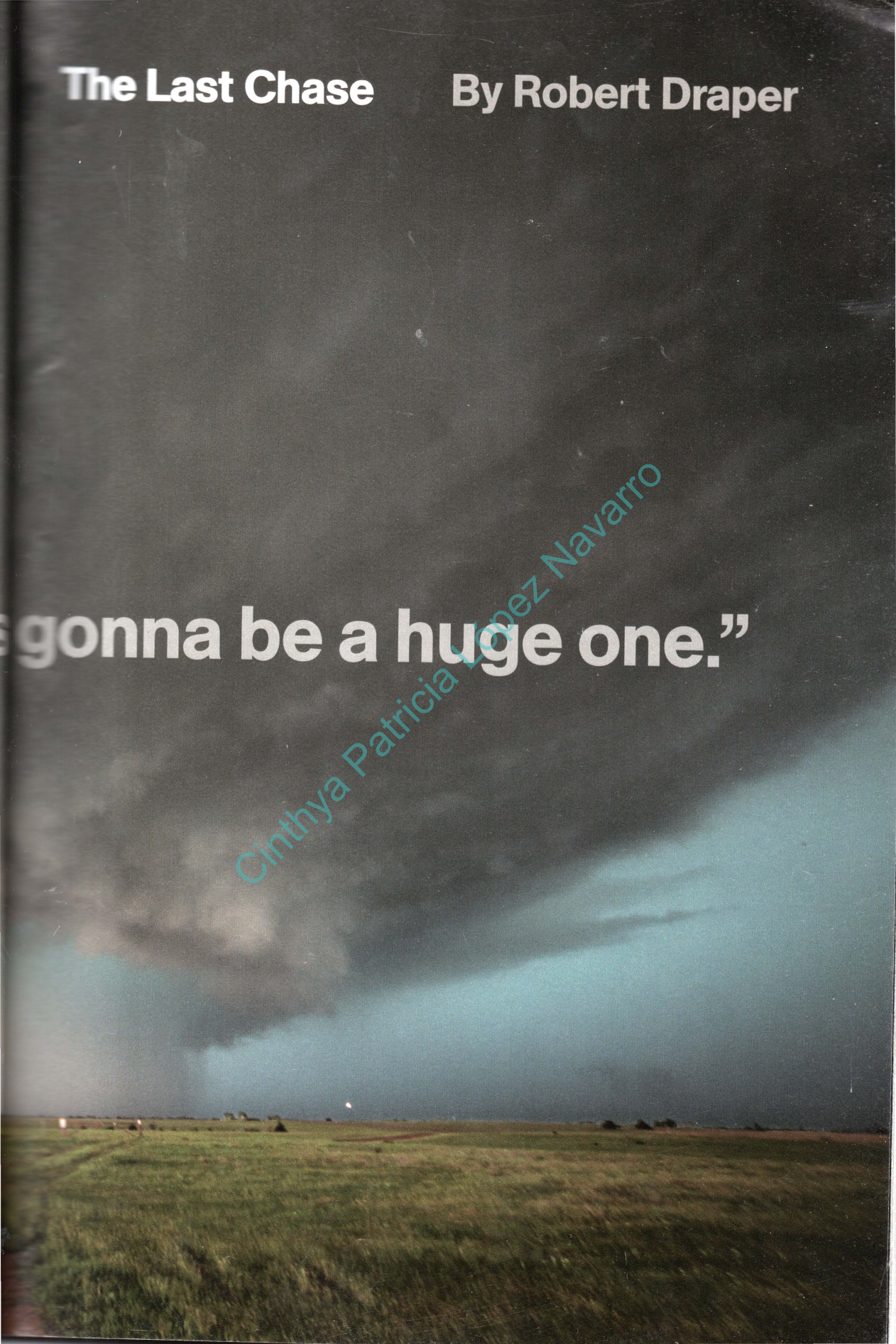
The Last Chase

By Robert Draper



Celebrated storm chaser and scientist Tim Samaras pursued tornadoes with single-minded passion. The quest to understand what went on inside them and on the ground under them took him far and wide and finally one evening on a fateful visit to a muddy Oklahoma farm road.

CARSTEN PETER; PHOTO TAKEN IN COLORADO IN AUGUST 2009

It's shortly after six in the evening on May 31, 2013. Sitting in the passenger seat of the white Chevrolet Cobalt, the 55-year-old, bookishly handsome storm chaser momentarily gapes at the video camera that the driver of the car is pointing at his face. Then he looks back through the window at the outskirts of El Reno, Oklahoma. The wheat fields are eerily aglow and shudder from a vicious wind. No more than two miles away from the car, twin funnel clouds spiral downward from an immensity of blackness. What we hear in the man's voice on the videotape is not quite terror. Nor, however, do his words sound clinically factual, in the manner of the scientist he happens to be.

"Oh, my God. This is gonna be a huge one," he says.

The man frowns. He strokes his chin with almost comical vigor. His name is Tim Samaras, and much of his adult life has been spent in the dangerous company of tornadoes. He's obsessed with them, to be honest—to the point where his wife, Kathy, would wryly note that her husband "had an affair with Mother Nature."

The affair had resumed later than usual this spring. "Who ate all the tornadoes?" he complained via Twitter. And on Facebook: "Why can't there be wedges harmlessly roaming the open plains for us geeky chasers to observe?" But then the month that storm chasers refer to as May Magic arrived—and with it, vertical wind shear produced by southerly winds originating from the Gulf of Mexico lifting and cooling air moving east over the Rocky Mountains, thereby generating thunderstorms and, along the way, lighting up the online discussion groups of happy storm chasers all across America: Severe weather! Severely GREAT weather!

On the morning of May 18 Samaras kissed Kathy goodbye and made sure that his lucky McDonald's cheeseburger—an actual, if by now somewhat moldy, cheeseburger—was situated correctly on the dashboard of his Cobalt. Then

Samaras was asked to play a lead in a new series called *Storm Chasers*. It became a primary funding source for years. The Clark Kent-ish engineer was now a TV star.

he and two members of his crew—a 45-year-old meteorologist named Carl Young and Samaras's 24-year-old son, Paul—bolted eastward from their home in Bennett, Colorado, for the mid-western plains known as Tornado Alley, where his other love awaited.

The tornado that very evening in Rozel, Kansas, had been gorgeous, glowing tangerine against the sun while its long rope undulated like a belly dancer—and, thankfully, left Rozel largely unharmed in the process. "Wow, did you see that?" Tim said to a fellow storm chaser, Jeff Pietrowski, who would remember Samaras's jubilant expression. While logging thousands of miles over the next four days through Kansas, Oklahoma, and Texas, Samaras and his team, known as TWISTEX, would encounter at least 11 tornadoes. Then, after four nights back home, Samaras returned to the road, in a truck outfitted with a gargantuan high-speed camera for the purpose of conducting lightning research in Kansas—though, as he acknowledged in a Facebook posting, he was "bringing secondary vehicle for a 'side' of tornado chasing (I love sides)."

In the May 31 videotape Samaras sits in that secondary vehicle, the Cobalt, a storm chaser on yet another chase. A man in exuberant pursuit of his passion. And yet it could not be more apparent that something is different this time—maybe because the viewer knows something that Samaras does not.

"It's heading straight for Oklahoma City," he mutters.

The tornado is the progeny of several thunderstorms that developed along a cold front over central Oklahoma that afternoon. At just after 6 p.m. it dropped out of the tip of the southernmost supercell, where the warm and moist air was most prevalent. Now it is a dense, moist leviathan. It rotates counterclockwise in a crazed ballet across the klieg-lit plains. The trees in its path shake as if possessed by the devil. Unlike its exquisitely geometric counterpart in Rozel, El Reno's tornado is a black wedge of indistinct composition.

"OK, I'm gonna stop," says Young, who was filming the storm as he drove. "We'll get a great view of it. This good?"

The Cobalt comes to a halt. Samaras and Young climb out, along with Paul, who is peering through a different video lens. The three men stand at the edge of a gravel road and squint

against the rain. As they do, a third funnel coils out of the sky.

"Three vortices!" Young exclaims.

"Yep," says Samaras. When he turns back to the camera, he looks awed by what he is witnessing. "Wow. This is gonna be a gigantic wedge."

Young agrees. "It could be a very long-lived tornado. It could be on the ground for miles."

They return to the car a couple of minutes later and, with the windshield wipers flapping, silently press on eastward, the tornado lumbering along to their south. Lightning flickers across the dismal sky. Power lines swing madly about. The wedge grows and grows, blotting out all traces of the sun, darkening the three men in the car.

"It's violent," one of them says.

Stop the tape. Pause and consider: These were not men given to violence. They were not gratuitous thrill seekers or adrenaline junkies or even kamikaze researchers fulfilling martyrdom in the name of science. In particular, the legendary storm chaser, inventor, and National Geographic Explorer Tim Samaras was known for evangelizing about safety and for bringing an abundance of caution to his vocation. Though the decade-long mission he had assigned himself—placing measurement devices known as probes in a tornado's path, which necessarily entailed putting himself in the same path—was inherently high risk, he went to considerable lengths to mitigate the danger. He practiced deploying probes incessantly, always noting the time it took. He studied the day's weather patterns as if the lives of his crew depended on it. He gamed out escape routes. And even after all that, Samaras would not hesitate to abort a chase if the roads were poor or the tornado was too rain wrapped for its path to be discernible. "I can't tell you how often we didn't deploy because he said, 'Nope, this is too dangerous,'" recalls Tony Laubach, a member of the TWISTEX crew. "It was almost annoying at times. We'd say, 'C'mon, we can do this!' But he was very cautious."

How, then, to reconcile that widely acknowledged fact with the tragic events that would overtake the three men on May 31? Did the perfectionist fatally err? Or was the storm at El Reno simply a monster that defied all calculations?

If some of the answers are finally unknowable, that would be fitting, since mystery was, and is, the true object of the storm chase. How does a tornado occur? Over the past 40 years, with the development of Doppler and other advanced forms of radar, researchers have become increasingly adept at tracking the rotating storms known as supercells. They can measure the atmosphere's "convective available potential energy," or CAPE, to determine a supercell's intensity. And after the fact they can rank a tornado's sheer destructiveness using the Fujita or the later Enhanced Fujita scales—both named after the famed meteorologist Ted Fujita, who began his career measuring the damage done by the nuclear bombings of Hiroshima and Nagasaki. But, says Howard Bluestein, one of the reigning experts on the subject, "we simply don't understand exactly what distinguishes supercells that produce tornadoes from those that do not."

That basic riddle tantalized both the scientist and the boy in Tim Samaras. From the early days, when storm chasers relied on folding maps and sought out phone booths to receive weather updates, to pursue a tornado has been to brush against a glorious if destructive mystique. "For me, it was the total beauty of the storm itself," says David Hoadley, now a retired program analyst with the EPA who began chasing in 1956 and is therefore understood to be the founding father of the storm-chasing community. The very architecture of the storm, Hoadley goes on to say, is awe-inspiring: the coherency of a gathering system as moist, warm air bursts through a cap of colder air and creates an updraft and then a massive anvil; the pillowy mammatus clouds that congregate beneath the anvil; the cloud ribbons known as inflow bands that rush into the storm; the descent of a "wall cloud," which tends to prefigure a tornado; and the twirling and talonlike "hook echo," usually composed of hail, shredded debris, or small raindrops, that often announces the tornado's violent arrival. All of this seemingly out of nowhere, in a matter of minutes—"kind of like a magical machine," says Hoadley.

The men like Hoadley and Samaras who devote much of their lives to the pursuit of storms—and yes, the tribe is overwhelmingly male—have a scientific basis for doing so. Still, to chase a storm is also to chase innocence, romance, and immortality all at once. The sensation that comes from

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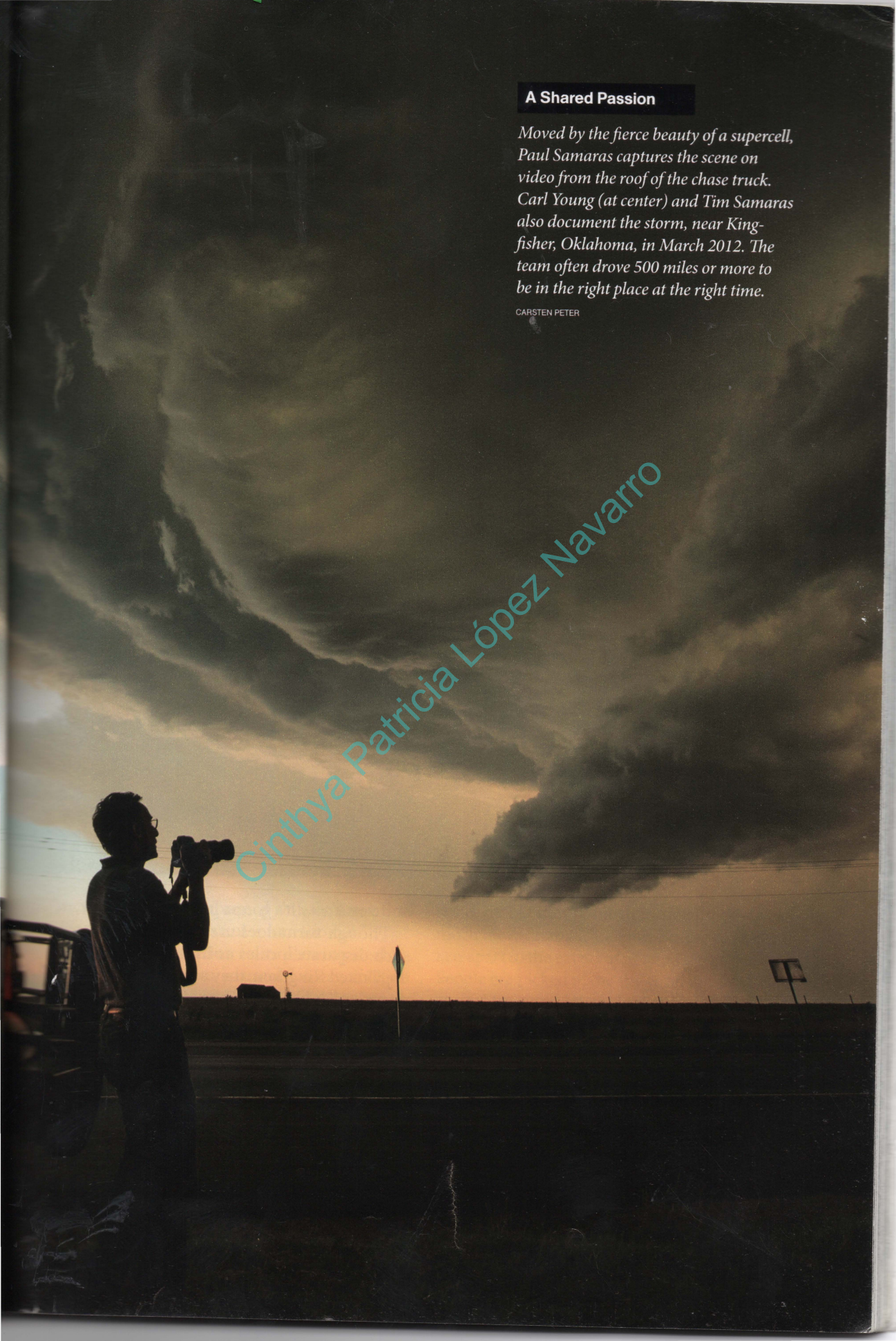
Robert Draper's last story for the magazine was an essay on photography. Photographer Carsten Peter frequently went on assignment with Tim Samaras.



A Shared Passion

Moved by the fierce beauty of a supercell, Paul Samaras captures the scene on video from the roof of the chase truck. Carl Young (at center) and Tim Samaras also document the storm, near Kingfisher, Oklahoma, in March 2012. The team often drove 500 miles or more to be in the right place at the right time.

CARSTEN PETER