Artists can be classic or romantic, fussbudgets or spewers, cultural radicals or cultural conservatives, and so on. One division that's always struck me is the one between those for whom art is a disciplining force (say, the photographer Cindy Sherman, or the conceptual artist Joseph Kosuth), and those such as the sculptor John Chamberlain (1927-2011), whose art seems to flow naturally from their hands. They make art the way a hawk flies.

In the summer of 1958, Chamberlain rented the painter Larry Rivers's house in Southampton, on Long Island. He discovered a 1929 Ford delivery van sitting in the back yard, and yanked the fenders from it. Then Chamberlain drove over them with his car. He didn't do it to be radical, to shock anybody, to be clever, or to indulge in that old modernist trope, expanding the boundaries of art. Chamberlain did it to get the shapes he wanted, which he then welded together to create the industrially jazzy sculpture "Shortstop" (1958). It's but one of nearly 100 works—mostly Chamberlain's exhilarating sculpture, but also some adroitly energetic works on paper—in "John Chamberlain: Choices," an exemplary retrospective exhibition at the Guggenheim Museum.

Chamberlain, the son of an Indiana tavern owner, dropped out of high school and undertook—in the middle of World War II's gas rationing—a road trip, with the idea of getting some sort of career in Hollywood. (Until he started selling enough art to support himself, he would earn a living as a hairdresser.) Busted in Blythe, Calif., for neglecting to pay a restaurant tab, Chamberlain enlisted—
though underage—in the Navy, and served for a couple of years, in the Pacific, on the aircraft carrier USS Tulagi. In the mid-1950s, he made his way to that touchstone for so many of the best American modern artists, Black Mountain College in North Carolina. There, he met and was profoundly influenced by Robert Creeley and Charles Olson, the poets who helped run the place. The rest, as one might say, is sculptural history. A half-century on, Chamberlain's early 1960s sculpture looks as fresh—if not fresher—than anything that opened in a Manhattan gallery last Thursday night.

At first—with such works as "Essex" (1960), a 9-foot-wide wall piece in which Chamberlain uses his almost-trademark found color of crumpled auto-body parts—he was suspected of operating within the boundaries of Pop Art, of having more in common with Andy Warhol's silk-screened car crashes than with Willem de Kooning's Abstract Expressionist paintings. Not true. Chamberlain is practically sui generis—though the idea of his best work (where steel is as malleable as paint) being AbEx in 3-D is a little closer to the truth. While "Three-Cornered Desire" (1979) obeys a couple of art-world maxims—make it big, and make it red—Chamberlain gives you more variety in his found rouges than most painters could stir up in a week of trying. Wonderfully contrapuntal bits of green and aqua punctuate the back side. The guy really knew his color. He also knew scale—his miniatures seem monumental—and could be really funny in where and how he placed hood louvers among his steely folds. Chamberlain's work is genuine American rock 'n' roll sculpture; it looks the way a good garage band sounds.

Only certain full and robust artists can make some mediocre work and still be great. Chamberlain produced his share of middling art—which, on anybody else's aesthetic scale, is still pretty good. After his breakthrough car-metal pieces and ultranonchalant works in cinched foam rubber, Chamberlain switched in the later 1960s to plain galvanized steel, leaving you (or at least me) with a feeling that something vital had been taken away. The exhibition contains a couple of 1970 works in clear polyester resin that are exotic in a not-good way, and the crinkled, shiny-silver aluminum finale in the rotunda, "SPHINXGRIN TWO" (1986/2010), might be a giant extraterrestrial Gumby.

In "Gondola Charles Olson" (1982), Chamberlain regains his automotive mojo, and right into our current century his oeuvre comprises a plethora of treasures in salvage-yard Baroque, including the atypically small "LEXICONOFFURN" (2006) and "Dictator Taxidermist" (2006), as well as the reassuringly big—about 10 feet tall—"Women's Voices" (2005). The last three of these by the way, are white and chrome, a combination only Chamberlain could handle without getting precious about it.

"It's all in the fit," was Chamberlain's motto. He was a master at plucking the right part from the scrap heap, and a genius at making it fit—that is, in making it contribute almost effortlessly to the slash and flow of the piece as a whole. It's been said of Picasso that he was a great painter who basically painted pictures of the sculptures that his paintings could have been. Chamberlain is thought by some to have done the reverse—made sculptures of the paintings that they could have been. But Chamberlain's forms and volumes and hollows and edges are so good that we joyously realize that they simply constitute some of the best sculpture of the past 100 years.