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"If you go to Hell, this is what you'll be doing"

I begin with an apology: I am not going to talk about the ethics of creativity today. I realized at some point this summer that I had already covered that dimension of my current topic, well enough for a paper anyway, at last year's meeting. What I had yet to do for an AFS audience, and what I am trying to begin to think about now is *what is creativity in a given context?* What does it look like, what does it feel like to be creative in a fabrication or repair shop in the middle of the Louisiana prairies? What I have today is one of the sections in the current manuscript that begins to peel back the layers of paint and metal, gloves and sleeves, to get inside the minds of these mechanics who fashion metal machines.

For the past two years I have focused my presentations on the object, the form, that really is the star of the show, the crawfish boat. And it is an amazing thing, an amphibious craft of native invention — co-invented, in some sense, by at least two different men working independently in their own shops, surrounded by their own neighbors, assessing their own individual and collective needs.

It is not alone in being invented around this time. Elsewhere in the manuscript I treat the development of the surface-drive boat, which I promise not to lie about presenting next year and I offer a preview here to make up for the fact that I'm not going to be talking about boats today but grain carts.

Gerard Olinger of Roberts Cove was one of the leading builders of crawfish boats in the eighties and nineties and was responsible for two significant developments that are now part of the boat's current form: moving the drive unit to the back and putting wheels on the front.

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Olinger is owner of the Olinger Repair Shop, a business he bought from his father, Ambrose, and which he operates with his brother Dale.

Over the past decade or more the Olingers have carved out a small set of niches for themselves. One niche, obviously, is that they are an agricultural repair shop, able to handle the kind of repair and replacement of parts that go into the wide variety of tractors and implements upon which farmers depend. Another niche is as a very small, very focused hardware store, willing to sell the stock they maintain for their own work to those farmers wanting to do the work themselves. (Gerard does not want the small repair work, and he recognizes that his willingness to sell parts, usually with a generous helping of advice or troubleshooting on the side, is not only being a good neighbor but also being a good business man — the good neighbor part comes first, however.) The final niche is that of a custom fabrication shop which installs side plows on tractors, builds PTO ditchers, updates grain carts, as well as continues to build a limited number of crawfish boats or refurbishes extant boats.

What follows is a section that begins to describe what happens inside the Olinger Repair Shop on any given day. My goal is to illuminate the kind of thinking which is the backdrop for creativity.

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In late May and early June, while rice and soybeans are still small dots of green in broad swathes of brown, farmers are already thinking about harvest time. While their days may be spent riding around in trucks or on tractors, their thoughts are on combines and carts. Some of the rice in the fields will be ready as early as mid-July. Most of it will certainly be ready by August. While two months would seem like a lot of time, it's not when you know everyone else around you is thinking the same thing, worried about the same horizon. Friends and neighbors are also going over gear in order to decide what is running fine, what can be kept running for the time being,

and what needs repair. If it needs repair, then it needs to get to a shop if it's going to be ready in time. There will, in short, be a line of combines and carts, and, unlike other stages of the growing season where a few days or even a week is negotiable, when it comes time to harvest it's always better to be at the head of the line rather than the end. There is nothing more anxiety-producing than rice ready to be cut, knowing that a sudden fierce gulf storm could lay it all flat.

Combines are complex machines, with more moving parts than an average person can take in even if you stare at them for a long time. The Olingers have mostly gotten out of combine maintenance. The parts are numerous and must be carefully tracked when coming off, which can be a problem even in a shop the size of theirs. And it really isn't a matter of space. It's more a matter of attention. Combines, like any complex machine, exist in layers, and thus attending to any inner part requires removing at least one layer of outer parts. Those parts have to be kept not only somewhere in the shop, but also somewhere in mind: you have to be able to remember from where that part came and in what order it came off the machine so that you know where and when to put it back on.

At any given time, however, the Olingers are not simply working on one job. Almost any large job at the shop is interrupted by any number of smaller jobs or tasks. Someone comes in with a hydraulic hose that needs replacing, or they need a new bushing, or maybe they need a quick fix for a piece of gear they are in the middle of using. Just as important as these urgent tasks are customers who come in and need to discuss a potential problem or job. Each entrant to the shop requires one of the two men to put down what they are doing and, perhaps more importantly, to set aside the mental space in which they were working. Where they are in a particular task has to be "saved" or committed to memory in some fashion. It's not unusual for someone coming into the shop to have to wait five to fifteen minutes while Gerard or Dale reaches a point where they can stop. Getting to a stopping point is not really a physical process but a mental one: a stopping

point is a place one leaves a task that can be easily remembered such that taking up the task again does not require a great deal of time "remembering where" one was.

It's for this reason and really no other that the Olingers have slowly gotten out of the business of repairing combines. There is, they feel, someone in the area who is simply better suited to do the job, and they are happy for it. They still work on combines, but only in terms of those parts where their fabrication expertise can play a role. And there are still plenty of parts on a combine that wear out: the sides and bottoms of cutting heads, the various bends in the grain path, the augurs that move the grain from the front of the combine to the holding bin. Essentially, any place that grain or grass, or the grit from the field that accompanies them, passes is a place where wear will occur. First, the paint comes off, and then slowly, but steadily the metal thins until it is almost no longer there. The same applies to grain carts, which have an order of magnitude fewer moving parts than combines, but they do come with their own set of problems.

Every June, there stands a line of grain carts outside the Olinger Repair Shop. The only thing that distinguishes them typically is their color, or what remains of it after many seasons of hard use. Otherwise each bears the same shape: two large, tractor-like wheels holding up a container that looks like an upside-down pyramid with a fence on top and something like a spout off to one side.

The task of a grain cart is a simple one: fetch harvested grain from the combine, haul it out of a field, dump it into a waiting truck. The offload from the combine to the cart needs to happen anywhere the former happens to be, and it either has to happen quickly or it has to happen while the combine continues to cut. Once harvest begins there can be no delays: the optimum conditions for harvesting are typically only a narrow window of time in south Louisiana. The rice or the beans must be dry enough that they will not clump anywhere along the path of the combine's gullet but not so dry that they shatter along the way.

Almost all the carts coming in are not coming in for simple repair work. Almost all of them are coming to be modified in some way. In almost all instances, the basic modification being done is a conversion from PTO-driven augurs to hydraulic motors. That conversion itself is part of a larger "hydraulification" of the cart, wherein the cart's gate is transformed from a hand operation, requiring the driver of the tractor to get out of the cab and, often, wrestle the gate open and closed, to one where a hydraulic ram opens and closes the gate.

Late May and early June are also the time when the heat and humidity of the long Louisiana summer begins to seep into the air. A hint of resignation begins to ring in the announcements that it is time to get to work, as the farmers gathered around the coffee pot in the corner of the shop glance out the open door, calculating the day's eventual high based on evidence gleaned at that moment. Gerard Olinger tops off his plastic coffee mug, snaps on its cover, and walks to the opposite corner of the shop, where the day's work will take place.

The first thing that has to happen is that the grain cart has to be brought into the shop. The interior of the shop is important for a number of reasons, and, given how difficult it is to maneuver a grain cart into the shop, it might be helpful to list them. First, all the tools Olinger will need are in the shop, and, just as importantly, already arrayed around his working space in a way that makes getting to them convenient, allowing him to stay focused on the task at hand and not having to think about where a pair of vise grips are. Second, not all the tools Olinger needs are all that portable. While both the acetylene torch that will be used to cut away portions of the cart and the arc welder that will be used to attach the new features are somewhat portable, their weight or their need for power make it inconvenient to move them, and perhaps the most important tool, a wheeled A-frame lift, cannot be taken out of the shop at all — it's small, metal wheels would quickly mire in the soft gravel and ground outside the shop. Third, the breezes that sometimes make the prairies bearable in the summer, should you have the fortune of finding

some shade, can wreak havoc on welding, dispersing the tight cone of inert gas, weakening or destroying the work and so should one arise, the shop doors are usually dropped down to block it out. Fourth, while the shop does indeed provide shade, it should be noted that even in the shade, the steel of the grain carts can conduct enough heat out of the air to make it painful to touch with ungloved hands.

And so on already hot days, everyone walks around with gloves on, a tad grateful that the sweat gives the leather a bit better grip and actually lends a small additional layer of protection should you grab a piece of too hot metal, perhaps yielding an additional tenth of a second or so for you to recognize your error and let go.

With the cart inside, the next step is to remove a wheel so that the cart be lifted up enough on the opposite side to give a man room to work on its belly. There is a great deal of cutting and welding and fitting and grinding to be done and no one wants to do it on their back or their knees. So the cart is asked to kneel a bit. With the tire off and the hub safely settled onto a block of wood to keep its hardened steel edges from gouging the concrete floor of the shop, the A-frame lift is moved over the remaining tire and chains are wrapped around the axle. As several tons of cart get slowly lifted between four and six feet into the air, everyone keeps an eye on the lift, which is allowed to roll around on the shop floor, re-discovering its center of gravity as the cart itself arcs away from it. Novices in the shop, like myself or once a nephew, are tempted to stop its lunging dance but are warned away by the story of the time Gerard's father Ambrose did not consider seriously enough the consequences of not allowing an object finds its center of gravity: the A-frame fell on top of him and broke his back. Such a story regularly produces newfound respect for the herky-jerky movements of the A-frame as its electric winch whines the side of a cart upward.

With the cart up, the cutting begins. How much of a conversion is happening determines how much needs to get cut off. Installing a hydraulic gate is the simplest conversion and requires the least cutting, but farmers in the last few years have become increasingly interested in a total conversion: replacement of the gate and of the augur, which means removing the bottom of the cart's grain bin completely. The amount of cutting involved and the number of surfaces and angles involved, require Olinger to spend a lot of time with the acetylene torch in his hand, alternating cutting on various pieces of metal and then hammering on them to get them off. One day, steeping in the combined heat of the day and the torch, he looked up at me and announced, "if you go to Hell, this is what you'll be doing." With that noted, he flipped his visor back down and continued his work.

With the bottom of the bin out, it's time for Olinger to determine what to build back. While he has done dozens and dozens of these modifications over the years, and he has a variety of templates both physical and mental lying about, each cart is different. …

… [FOLD HERE]: *The rest is a compression from the larger manuscript.* …

It would be easy for any casual observer to be fooled into perceiving that modifying a grain cart, or installing a side plow, is an easy affair: all you need to do is bold and weld some things and you're done. It would be especially easy to be lulled into such a perception after having watched Dale Olinger install the tenth side plow of the season or having watched Gerard Olinger modify the sixth grain cart. Surely working on a standardized part like a tractor or cart must itself be a standardized process. A John Deere is a John Deere is a John Deere.

And yet a John Deere isn't. John Deere tractors vary from model to model, and each model line changes from year to year. Hydraulic lines that you have to work around are here on this model this year, where they weren't last year. An irksome battery box is no longer there, but it has been replaced by a modified exhaust stack. The rear axle, to which the side plow mounts, now has

an offset. And none of this includes the individual tweaks and modifications that each farmer makes in adjusting the width of his tractor's carriage or running tires of different diameters.

Our quick observation ignores, too, the complex three-dimensional geometry required to "float" a plow just ahead of the rear tire, intersecting the thrust vector of the tractor, represented by an abstract arrow drawn through the center of the tires, at just the right angle that it mimics the width of the rear wheel and throws the soil clear of the path. The disk of the plow must be close enough to the read wheel that it, in effect, "follows" the track that the wheel eventually will pursue, but not so close that either pulled up for travel or let down for work that it can at any time, having struck a rock, endanger the wheel.

The same kind of complex geometry applies to the bottom of grain carts, where irregular polygons are paired on either side of the grain cart's upside-down pyramid in order to clasp the regular cylinder of the grain augur, which is itself tilted at somewhere between forty-five and thirty-five degrees from the vertical.

Nothing is as simple as it appears.

In order for everything to fit together, no mean feat in and of itself, as well as work, I have seen both men perform a variety of mathematical calculations in their respective heads. Sometimes, when there are enough numbers of sufficient complexity, I have seen them make notes on various surfaces: the steel on which they are working, a work table, the shop's concrete floor. These numbers, in conjunction with detailed verbal descriptions, and a set of hand gestures allow the two men to communicate with each other as well as with knowing others what needs to get done, in what order it is to be done, and how to do it. There can be no good weld without a surface first being ground clean, no lasting bolt without the right torque, and nothing without good measurement — and every measurement depends upon knowing what the exact tolerance framework is (how much you are allowed to be in error).

All of this mental work appears to get done either in passing or in conversation, and so it is easy to look past it, caught up as we can be in the flashy spark of welding. All this work appears to get done fairly quickly, apparently taking far less effort than lifting a plow into place — or is it that it occurs while the plow gets lifted but we cannot see it?

The speed and ease of the work leads to an apparent label: intuitive.

Let's accept that label, intuitive, but let it have its usual function, where it mystifies, or sometimes trivializes, some feature of human reasoning — it was not all that long ago that women, and their reasoning, were carefully caged in by describing their thinking as "more intuitive."

For one, we now know a great deal more about intuition. Starting in the 1970s, with the work of the Dreyfus brothers, organizational psychologists who examined both commercial airline pilots and chess grand masters at work, we have begun to understand that intuition, especially the kind of intuition that we credit to experts. The Dreyfuses developed a model which outlines five stages in the development of expertise. In their model, an individual moves from novice to expert, it's not simply a matter of knowing more, of accumulating and refining rules — as the computational model of human cognition can sometimes seem to suggest, but of experiencing a fundamental shift in how you perceive the world. Experts use different models of the world than novices, and those models are based not simply on design patterns but patterns of experience which are steeped in the design and its interactions with the world.

Patterns of experience might be something cognitive scientists would say are, or lead to, prototypes. We folklorists might describe these patterns as competence drawn from multiple performances over a period of time. Ordinary people might describe this as wisdom, with regards to certain kinds of acts, perhaps where referentiality is foregrounded, or as grace when discussing acts where form is foregrounded.

My goal here, and in the larger project, is to extend grace into places it normally does not go. Not because it cannot go there but because we do not visit there often enough to discover that it already is there. It lives there. It breathes and grows there. Machine shops are dark places, dirty and greasy places, loud and dangerous places. But they are dark because the spark of the weld needs careful nurturing and they are dirty because they are filled with the sloughed skins of the machines that make our skins possible, machines that grow the food that we eat. Food must go into our mouths in order for words to come out, and this is no mean feat when faced with not only complex natural ecologies but also complex cultural ecologies. Ignoring the intellectual dimensions of the physical realm upon which we depend impoverishes us needlessly. As Henry Glassie has noted, "studies focused on words, whether written or spoken, omit whole speheres of experience that are cumbersomely framed in language but gracefully shaped into artifacts" (44). The shapes in this case may not be graceful but their shaping was, if we allow grace to grow into its actuality, the working of the human mind upon otherwise inert materials … bending … shaping … and, yes, even unseemly grinding … bringing forth onto the landscape, into the world, new forms with a confidence born out of knowing what it is you want to do.