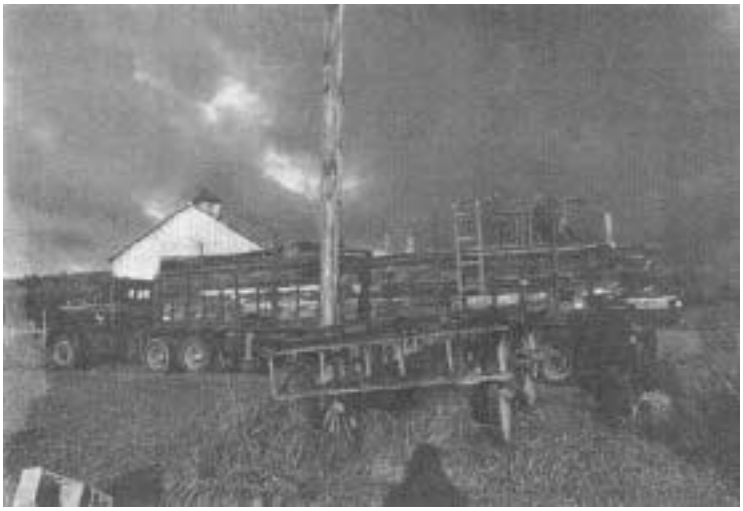
House Moving—Piece by Piece

by Ray Clark

It takes a special builder and a special client to make this labor of love work out.



This pile of wood is actually the carefully labeled pieces of a circa 1680 home moved from its original site near Kingston, R.I. to its new home in Norwich, Vt. Notice the original stairway sitting atop the pile.

Homebuyers are turning more and more to historic houses, but are not always satisfied with the original site. Despite the expense, some of these old-house-buyers are willing to move the house to the site of their choosing. This may bring to mind images of huge Victorian houses rambling down the road on semis. But the fact of the matter is that most houses are moved these days in pieces.

Many of these homes are being marketed by a network of preservationists, who have gotten into the business of matching potential owners with historic buildings. Some will simply search for materials or homes, dismantle them, and sell them as is. Others will sell and reconstruct the frame. As part of our renovation business (we also do some new construction of traditional-style buildings), we go a little further, and completely reconstruct the home with finishes. Since our first "moving" project 18 years ago, when we bought a house, barn, and 10 acres for $3,000, we've moved and reconstructed 12 homes.

Why Do It?

This kind of business is labor-intensive, but it can be a lot of fun too. (Often I feel like I'm on a scavenger hunt.) It requires a certain love for old houses. Old homes have a level of quality that is very expensive to duplicate in new construction and I feel good about preserving their charm and character. And with new mechanical systems and thermal tightening, I believe we produce homes of a quality that far surpasses most homes built today.

Our crew is unique, in that the workers are highly skilled. and maintain a high degree of historical knowledge. We try not to specialize, and all seventeen members of our crew are trained to do all tasks, including plastering. They say that old houses are 75 percent lousy work, and 25 percent wonderful work, and we make sure that everyone gets to do some of each.

It takes a special kind of client as well. Generally, we're approached by clients who are willing to pay more, love old buildings, want a particular style or period, and are willing to wait while we scour the countryside, looking for a house or houses that will suit their purpose.

The Hunt

Before we start the actual search, we need to have a good idea of our client's needs, in terms of square footage, layout, and whether the design translates into a barn or house frame. Barn frames are more flexible, and can be adapted more easily into a contemporary layout, if that is the intent.

Old houses are not that hard to find–there are plenty of abandoned houses. But sometimes it's hard to lo-

Originally, a stone-ender, this 1680 house (the pile of wood featured in the lead photo) went through dramatic changes (in 1725 and 1740) prior to its move and again in reconstruction. The stairway went through some changes as well.

cate the owner. We once tried to buy a house that we thought was owned by Dartmouth College, in Hanover, N.H. They had no proof of ownership, and said if we could prove they owned it, they'd sell it to us.

There are also dealers who stockpile historic houses and materials, and you can call and have them describe their inventory over the phone.

Once You've Found the House

Once you find a house that suits your project, you need to negotiate with the owner, and that can often be under pressure. I once had only two days to make a bid on an abandoned building in Massachusetts. It was about to make way for highway improvements.

Figuring out a fair price isn't always easy. Because of the high labor costs that go with reconstruction and dismantling, it rarely makes sense to pay a high price for the frame itself. If the building includes good quality interior doors, floors, masonry, and windows, you will have to pay more. I've paid anywhere from nothing to $10,000, but the market's changing quite a bit. As the demand for these houses increases, so does the purchase price. I would guess that my $10,000 frame would cost $40,000 today. In the end, you have to figure out what it's worth to you. I always try to figure in the cost of leaving a clean site, since I feel that's a responsibility of the dismantler.

I do as much background research on the building as possible. I check with the neighbors and town records to find out when it was built, what kinds of changes it went through, and how it has been used. I feel a little bit like an archaeologist at this point. We moved a 1680 house from Rhode Island to Vermont that was originally built as a two-room stone-ender, was changed in 1725 to a four-room home with a central hall, and in 1740 had its rear converted into a saltbox. (In reconstruction, we added a separate frame from an 1850s general store we found in Royalton, Vt.)

In another house that had been built in Taunton, Mass. in 1762, we uncovered a brick wall in the basement in the course of dismantling. Behind it was an entire summer kitchen used for laundry and summer cooking.

Occasionally you find a house with a frame that is perfect. And even more occasionally, you might find a house whose frame is perfect, with a quality interior worth saving. A building with window sash in good repair is a real find. But some buildings are only good for parts. And we often end up replacing windows anyway because of energy concerns. There are several custom millwork shops that supply good reproductions.

A careful analysis of the house will help you determine just what you're getting, and figure out what it's worth. It will also help you later when you plan the dismantling.

It's also important to document the process, especially if the building is historically significant. So we photograph the original structure. The photos help in the reassembly process as well.

There are those who feel it is "morally" wrong to dismantle a historic building. But many of these buildings don't get the attention they need in their historical location. One building we bought had been seriously damaged by fire. The owners couldn't face reconstruction, and were ready to bulldoze it into the ground. We were able to salvage priceless flooring, doors, mantles, and pieces of the frame.

Taking it Apart

Safe disassembly requires a plan. We need to know which areas are going to be repaired, which ones reinforced for the dismantling, and which ones will be rebuilt entirely. I've seen people tear the exterior sheathing off the first-floor walls and weaken a structure so much it couldn't support itself. You have to keep in mind that the structure is being weakened all the time. This isn't a job for novices. It's technically exacting. The structural analysis should include a check for rot or weakness at sills, rafter tails, and bottoms of the posts. Also check the condition of the roof. But even if it all looks good, it isn't safe to assume the house is sound. We often find surprises after taking off the plaster.

If we've decided to keep the trim, doors, cupboards, etc., we remove the materials carefully, marking as we go, orienting each piece to the compass. We number each room, with one side of the building having odd numbers, the other even. I use a lumber crayon to mark framing members, and try to do it in inconspicuous spots. People assume that frame parts are interchangeable, but that isn't necessarily true. They're often hand-cut and irregular. We once had a barn raising to which we'd invited 125 people. We put the plates on backwards, and I didn't discover it until the next day when all the people had left.

When we're removing a painted floor, we spray-paint a triangle over the floor since it's going to be stripped anyway. The triangle helps us easily reassemble using the original pattern.

There's no special trick to prying it all apart, except that it takes patience and care, and generally you should try to save as much of the original fabric of the building as you can. Even ratty sheathing can be used in parts.

We especially try to preserve the masonry, such as lintels or the hearthstone. It's fairly easy to pry these pieces apart, because early masons used lime mortar, which crumbles easily. In most cases, taking the fireplace entirely apart is the most cost-effective method. In cases where it's important to preserve for historic purposes, however, the firebox can be saved in one piece by framing it in plywood, wrapping it in metal banding, injecting foam into it, putting steel rails beneath it, and lifting it out neatly by the frame with a crane.

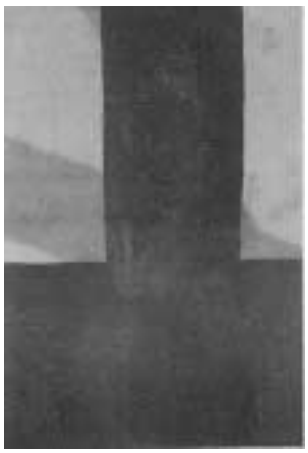
After we've removed the most valuable materials–finished floors, cupboards, panelling, mantles, etc., we start at the roof. We work from the top down. Depending on the size of the frame and its structural integrity, we use a crane. Often it's a necessity because of the size of the timbers. But a crane can cost a lot—usually $100 an hour—so we try to prepare for all the crane work in one day. With barns, a crane is definitely the way to go. With houses, you can get by with a large crew. Once we tried to do a barn with just four people. The ridgepole was originally installed with 100 people at a barnraising. We were doing pretty well, but there was a rotten plate and the rafter tails kicked out, and fell down around us. Fortunately, nobody was hurt. If you do use a crane, use nylon slings to protect the material.

The most important point about the disassembly is to dismantle in the exact opposite sequence as the building was raised originally. We start at the top, and work down. In the process weak pieces need to be reinforced. Rotten or broken plates need to be sistered before being taken out of position. Removing pegs can be frustrating, particularly if wet. If they were draw-pegged (pulling the tenons into the mortise) it's almost impossible. Sometimes the pegs have to be drilled out.

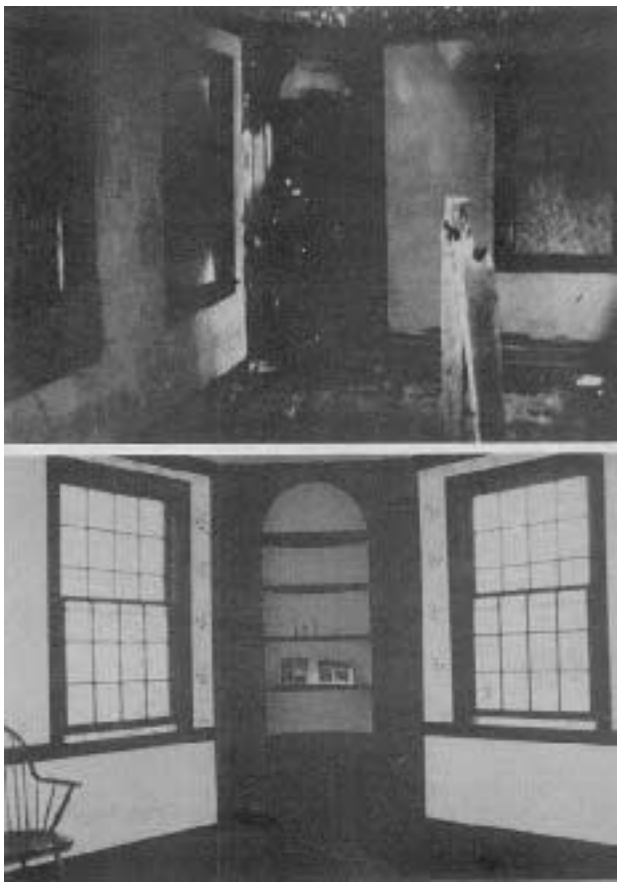
Trucking and Tracking the Parts

Because of the length of the timbers, we find it best to use a flatbed trailer. We usually rent one and leave it right at the site. Logging trucks have worked well. Using slings (and a crane) the truck can be loaded pretty quickly with very little effort. Once we're completely loaded we drive the material directly to the

Safe assembly requires a good working knowledge of the original framing sequence and the soundness of the timbers. In this case, it was important to raise the earliest (1680) portion of the frame first.



When dismantling an old frame, it's important to keep track of the parts—they aren't interchangeable. Early American timber-framers helped here, they used a roman numeral system to mark the timbers.



Some purists resist the thought of moving historic homes away from their historic site. But many of these homes suffer from abandonment. Reconstruction can salvage the charm of the home, and many of its original details, such as this corner cupboard, even if it cannot preserve the original location.

site. The longest distance we've moved a building is 350 miles, although a friend of mine has moved one from New England to Alaska. If we're not going to rebuild right away we store the material. In general, I try not to stockpile: it's too expensive.

Over the years we've learned some pointers for storing house parts: The material needs to be kept under cover, for it will discolor in sunlight. Not only will it be less attractive, it will be more susceptible to rotting. Mortise holes should be left facing down, so they don't fill with water. And most important, all of the timbers should be stored by type, so that you won't forget how the timbers were being used. It helps with the reconstruction to have organized piles of rafters, girts, etc.

We've taken timbers that you could pull apart with your bare hands and drilled in liquid epoxy. The repaired material is actually stronger than new.

Putting It Back Together

Before rebuilding begins, we need to inventory the parts-which pieces are missing or broken at this stage. There are some parts that are worth repairing, and this should be done before rebuilding. If a piece is structurally important we have to repair it. We will sometimes leave a piece alone, if it's mainly cosmetic. We try to repair rather than replace when the element is historically significant, or when the piece would be hard to match with currently available materials.

Epoxies are a great help with repairs. We've taken timbers that you could pull apart with your bare hands and drilled in liquid epoxy. The repaired material is actually stronger than new. We use paste epoxies too, but only in areas that will not be very visible. We also use fiberglass rods for strengthening, by drilling them into place, and epoxying them. We stay away from steel if possible, but there are many instances where that can be an enormous timesaver. If we do use steel, we make sure that it's not visible, damaging the "historic look" of the new home. We try to repair wood as much as possible, because it's not easy to match size and color. But we usually need to use new pegs—the old ones are generally shot.

The sequence in assembly is the same as in the original raising. Again it's nice to have a crane, especially for barns or large houses with big timbers. When finishing the interior, we try to use as much of the original material as possible. If we have original flooring, we want to preserve the charm of an old floor, so we try not to sand it down.

The walls will be thicker than they were originally, because of insulating and adding central mechanical systems. We put a lot of effort into making the new building tight. Sometimes that's not easy to do in the context of an old building, and we have to get creative. Once we insulated a house with plank walls by glueing rigid foam insulation to the planks. We use stressed-skin panels in barns and post-and-beam houses. Besides providing insulation, this helps stiffen the frame. Now that stressed-skin technology has developed, buying the panels is most cost-effective, but we have in the past made our own by building them in place.

This badly neglected house was moved from Taunton, Mass. to Hanover, N.H. Restoring the original 1762 center chimney was an important part of this project.

Air infiltration is always a problem, with windows being the weakest link. We weatherstrip, and use magnetic interior storms.

We try to use interior parts from the period of the house, but sometimes we have to replace. For repair or replacement we have our own woodworking shop where we duplicate moldings, panelled doors, and cabinetry.

It's Worth It

Throughout the project, we have to keep in mind that the client has a certain look in mind. We have to be committed to that level of quality, and period or style. But the process requires patience and tolerance on everyone's part. All building is compromise, and with old houses, there will be a lot of irregularities. Walls won't necessarily be perfectly straight, floors perfectly smooth. The process of reconstruction can last from 8 to 14 months, and clients can expect to pay at least 15 percent more than it would cost for conventional new construction-about $100 to $120 per square foot. But what they'll be getting is the irreplaceable charm of an old house, tightened and improved, and right where they want it. ■

Ray Clark is principal of Recreate lncorporated, located in Lyme, N.H. and has been in the business of moving and rebuilding homes for 18 years, in addition to regular renovation and new construction.