



Center for Clinical Trials

Department of Anesthesiology and Critical Care Medicine
Department of Biostatistics
Department of Epidemiology

Department of Medicine
Department of Ophthalmology
Oncology Center

Tuesday, 19 December 1995

Memorandum

To: All document designers and producers

Fr: Curtis L. Meinert

Re: Scaffolding

The back translation of the Gold Standard editorial I was asked to write for *Ophthalmology* is what prompts this. I send them a piece with the necessary scaffolding and in the transactions that followed I am left without the necessary scaffolding. Scaffolding is that which is needed to get back on the roof after repairing a leak. The analogy here is the code in the document.

In the physical world, the repair of our monuments and cathedrals would be made easier and cheaper if we simply left the scaffolding in place, but imagine the visual clutter. How would we feel when that which we love is surrounded by scaffolding? The Statute of Liberty, standing free and clean, is not the same as when she is encased in scaffolding. Clutter is clutter and it would have the same effect in a manuscript if the scaffolding of a manuscript were visible to the reader. Editors would go crazy, so it has to be removed or hidden.

What do the builders do when finished with a building or a repair? They remove, at least to our eye, the scaffolding. Keep your eye on the building next to us. Note the changes in scaffolding as it has progressed and what will happen before the grand opening. But look closer. Some of the trapping for scaffolding will remain. You just won't see it. There will be pins and plates, too small to be seen from the ground, that will be left in place for future use when repairs and changes are necessary. The next time you are marveling at the Empire State Building look for the trapping of scaffolding. Forget the building. Forget the view. Just look for scaffolding. Look at the building through the eyes of a someone having to maintain it. Imagine you are a window washer. Check the roof for the cables and catwalks of window washers.

If you own a house and have ever been on its roof you must have wished for permanent scaffolding to allow easy up and down transit. Whenever something goes on the Fritz on the roof you need a ladder and a prayer.

Have you not noticed how frustrating it is when manufacturers build assuming no subsequent repair? Car builders make sure that it is easy to get to the whatchamacallit because they put it in before the widget goes in. But try to get to the whatchamacallit once the widget is in, when the blame thing is in your driveway and refuses to go because of a bad whatchamacallit. How can it be that you have to stand on your head to get at it? How could the manufacturers be so dumb as

to believe the whatchamacallit would work forever? Could it be that they did not plan for a faulty whatchamacallit or did they merely want to covert a simple repair to one costing \$425 at your friendly dealer?

Assuming (naively) that car manufacturers do not have some grand plan for ensuring a continuing trade for their dealer repair shops, wouldn't it have been better for all if they had made plans for replacing the whatchamacallit when the car was built?

Anything that is well designed and built has provisions for repair. The reason why it is not built into many of the things we buy (and then curse when we have to repair them) is because of poor planning and the drive by manufacturers to keep the price down at any cost. We won't pay a lot for that muffler but we want it to last forever. We come to realize the cost of repair or replacement later, but by the time we do the "lifetime satisfaction guarantee" (whose life?) is a yellowing piece of paper in Sam's litter box.

There are elements of this kind of manufacturer thinking right here in River City. Most documents have a life span measured in days, weeks, months, or years. My dictionary was born one misty morning before the ink was dry on my first book. It is a living breathing organism. You can't see the scaffolding in the print version, but it is there.

Why is it still there? Because I know I will be back on the roof for repairs. That's why.

Remember the football letter? That was about teamwork so is this one. All we do here (actually we do a little more) is produce documents with varying life expectancies and we produce them as a team just like people in a car plant.

We need to produce them to be robust and with the necessary scaffolding for subsequent repair. If you are a designer or producer of a document (most everyone here is in one or both of those classes) you need to do your part in building the necessary scaffolding and in making certain that someone doesn't remove the scaffolding when "*finished*". Delete the word from your vocabulary. Erase it from your brain.

Ditto for *final*, as in final draft. *Final* is an expression of hope and whimsical thinking. Forget it! Assume, even if you know you will never have to go on the roof, that someone else here will be back up there. Build the ladders into the document, and don't remove them when you are "finished". It is not easy to shinny up with nothing but your spiderman shoes.

First, to you designers of documents: Design for repair. Recognize them to be living breathing organisms. Assume that whatever you are producing has a life beyond the immediate. Assume that it could undergo 18 iterations hence and that after it is "done" it will one rise one day from the "dead" and be among the living again. We are said to of the dust and ashes of the universe. The same is true of the documents we produce. They are, to a large extent, cut and paste jobs of the past with a little rearranging (a slight, but apt, simplification).

So why do we think that the things we are producing now will be finished this afternoon and gone forever?

I hate stuff that doesn't work or that can't be repaired. I hate it when I get inside some machine only to find the message "No user serviceable parts inside". We (Dudley and me) have warmed our tootsies at more than a few fires fueled by things half finished from my shop because of bad design.

How does one hide scaffolding in our business. Part of what some of the HGDS macros are for is hiding scaffolding. Some of the options in the ManFinal macros are for hiding. The purpose is to produce a good looking finished product but to leave the essential pins and plates in the base document for future use.

Another trick is to print certain things in white. Something in white is still in the document, it is just unreadable against a white background. The white print trick is useful for explanatory notes and left over debris that may be needed for the next iteration.

But you can't hide what is not there. If the structure is so barren as to be free of pins and plates, there is nothing to hide. Production is easier, but pity the poor soul who has to get back on the roof.

The documents produced should be robust. They should contain enough code so that they look the same regardless of where they are printed and regardless of the settings on a machine. If what you produce doesn't look the same when somebody else prints, you have a DOA document. Revive it and try again.

The requirement of robustness means that there must be enough code in the document produced to make it robust. It means you have to have sufficient code in the document to override the settings of the machine to which it may be exported. The requirement of robustness is why you cannot use the space bar or tab key as a vehicle for moving the cursor. Something that looks fine in one font will go ferschmiled when someone else prints it in a different font. DOA. If you use the space bar to align text you are behaving like the car manufacturer. Pay me now or pay me later, but somebody will pay.

Perhaps the worst of all is having somebody take the ladder away when you are on the roof. That is what happened in the Gold Standard piece and drives me to this. I sent a piece to the Editor of *Ophthalmology* with the necessary scaffolding for reiteration and I get back a prehistoric typescript to work with because that format is easier. We produce a new iteration here that is better than what we got but has no ladders to the roof. The ladder I am talking about in this case is the referencing code.

Referencing and the data contained in reference citations is a basic part of our trade. Part of the HGDS is designed to create references with the necessary targets and references.

The order of references changes over the life of a manuscript. Some come and go. Some are deleted in the 3rd draft and show up again in the 7th draft, and so on. Any system of production that fails to include provisions for such changes is like designing a skyscraper without any equipment for window washing.

One cannot manage the reference numbering business reliably by hand. The chance of error is simply too great. Hence, what one requires from day 1 in the manuscript writing business is a robust load and go numbering system that, regardless of what happens, always comes out right when you generate the document. In the referencing business, that means that we want a document such that one could delete a reference from the list and then reassemble and regenerate via Manfinal and everything is correct. The references should renumber without baby sitting. To make that happen, you have to use the reference and target features of WP. Nothing else will do. If you do not understand those features, learn them and use them. Do the necessary targeting and referencing by hand, use the Ref macros in HGDS, or write your own macros, but target and reference.

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