



Interlude:

A number of people have asked my opinion of "Rethinking Wrench Time - The evolving science of keeping craft workers on task: How measurement - minded companies attack time-wasting management flubs that frustrate workers and slow production." in Engineering News Record, June 6, 2011. I was surprised because work sampling is an old set of practices that have been little used since the late 1970s. ENR reports that there have been advances in the technique by increasing the number of categories recorded, adding data collected by surveys of foremen and supervisors and immediate efforts to solve problems revealed in the studies. I don't doubt that such data can be collected, analyzed and acted on in ways that improve productivity and reduce cost. And I know work sampling can be gamed, usually produces resentment, and misses the opportunity for deeper learning and improvement. One thing at a time:

Gaming the system

Once upon a time around 1978, I was asked to help the management team on a large industrial project figure out why reports from the work sampling initiative were showing both improved "wrench time" and reduced productivity. It just seemed unlikely that people could spend more time working and get less done. So I carried my TimeLapse cameras to the site, climbed the structure and filmed operations. I saw strange and things standing there. Every time a worker went to the toilet, a piece of pipe or lumber was left leaning against the outhouse and carried away when leaving. And I saw a crew moving heavy lumber from one location to another. Working in pairs, they picked up several pieces and carried them from one pile to the next. And then they carried one back. Hmmm....

I climbed down and asked the crew to explain these oddities. They explained that the project was being studied with work sampling and that they understood the categories. Installing materials counted as direct work. Handling materials gained more credit than walking empty-handed; So they always carried materials. The statistics showed walking empty handed was dropping while the amount of time spent handling material was going up. Are we surprised? The old saw, "What gets measured gets done." is true.

Resentment

Few people like to be watched, have their actions recorded and judged by another. One can imagine that managers and engineers in their offices would be no more enthused about the approach than the workers. The ENR article does say near the end that foreman and superintendents were also surveyed before conclusions were presented to management. I suspect these surveys are those developed in the 70s by researchers from Stanford and the University of Texas. These craftsmen surveys were used in research for the Department of Energy to better understand the relationship between the inability of workers to do their job for lack of tools, materials and other necessities and motivation. These surveys asked the workers



and foremen to report what was keeping them from their tasks. (It is worth noting that the results from surveys and work sampling usually differ. I suspect this may be in part because an observer and a person in action may apply different rules for allocating time. It is very difficult to tell when anyone is thinking or planning their next step or to be certain where the boundaries are between categories.) I used sampling and surveys to help understand the situation on the project where I met Glenn Ballard and Dr. Richard Tucker made manifest his idea for the Construction Industry Institute. Surprisingly, or more correctly, embarrassingly, we did not consider the lack of wherewithal at the workplace to be related to planning.

The Bigger Opportunity

The ENR article is correctly named and it doesn't put attention on the planning system as the source of the delays. The article says the data reveals management flubs and has increased productivity. This sounds like a good idea but there are cautions and problems. The article doesn't define a "flub". It usually means a mistake. I don't doubt people could be better trained and motivated but thinking this way puts our attention on the individual and not the systems they apply and work in. We have learned that traditional activity centered planning systems do not produce predictable workflow. "Flubs" aren't the problem, the design of planning system itself is. It wasn't until the early 1980s that we began to think about planning itself. Glenn Ballard's great idea was to measure planning system performance and then to act on the reasons for failure. This puts the attention where it belongs, on management and the essential functions of planning and organizing.

A Bit of Heresy (the word is from the Greek, *hairetikos*. It means "able to choose.")

Increased productivity is the aim increasing wrench time but increasing productivity doesn't necessarily improve project performance. Why? Because increased productivity, particularly in the short term to make the cost reports look good, to increase cash flow or to increase wrench time, changes the way the work organized. In practical terms the crews do the easiest work, or the work that earns the most value - show pipe, or change the operation to maximize productivity with no concern for those downstream. We know that reducing workflow predictability reduces project performance. Remember Dr. Goldratt? His book "The Goal" was the inspiration for the Parade of Trades®. And his "Theory of Constraints" taught us to find the bottleneck and improve throughput there. Improving local speed and productivity doesn't improve project outcomes if it reduces the predictability of workflow. Local solutions to "problems" identified by work sampling will have the same negative consequences.

I don't say work sampling is wrong but I am sure there are better ways to plan and organize work. And I am sure that top-down monitoring is not the best way to find ways to improve performance or motivate the workforce. Blaming managers for flubs is no more effective than blaming workers for lack of tools; Neither is as effective as designing project based production systems to operate on a lean basis.

A thought and a reminder: Perhaps we should have a John Henry contest between the work-sampling and Last Planner®. And I'm reminded of Dr. Zeus and his Bee Watcher Poem.



This is followed from a poem written by Daniel D on the site where I found the good Doctor's poem, <http://www.thefissiongroup.com/blog/2007/05/25/the-bee-watcher/> (Neither Dr. Z nor Dan has been nominated for Poet Laureate.)

The Bee Watcher by Dr. Seuss

Oh the jobs people work at!
Out west, near Hawtch-Hawtch,
there's a Hawtch-Hawtcher Bee-Watcher,
His job is to watch...
Is to keep both his eyes on the lazy town bee.
A bee that is watched will work harder, you see.
Well...he watched and he watched.
But, in spite of his watch,
that bee didn't work any harder. Not mawtch.
So then somebody said,
"Our old bee-watching man
just isn't bee-watching as hard as he can.
He ought to be watched by another Hawtch-Hawtcher!
The thing that we need
is a Bee-Watcher-Watcher!"
WELL.....
The Bee-Watcher-Watcher watched the Bee-Watcher.
He didn't watch well. So another Hawtch-Hawtcher
had to come in as a Watch-Watcher-Watcher!
And today all the Hawtchers who live in Hawtch-Hawtch
are watching on Watch-Watcher-Watching-Watch,
Watch-Watching the Watcher who's watching that bee.
You're not a Hawtch-Watcher. You're lucky, you see!



Daniel D

Who would have thunk it?

It's simple you see.

Dr. Seuss on leadership.

Lessons from a bee.

The bee was lazy,
and people watched,
when they should have jumped in,
and cranked it up a notch.

To empower the bee,
to "be" his best,
and work as he should,
that's really the test.

It should not matter,
as you can see,
who is watching,
you or me.

Work may be hard,
but you'll never get bored,
if you do your work,
to serve the Lord.

(Wow. I am a poet and didn't know it... haha)

Prelude 2

I wrote in the last note about the moment when I realized my focus of attention and improvement shifted from individuals to systems. Another Prelude-to-LCI happened shortly after that. I had been living a crazy life, studying construction operations as a productivity improvement consultant. I would film crews working, always with their knowledge and permission. Then organize and analyze the data, prepare charts and graphs and then present results. Normally these presentations were to both management and the crew. On one occasion working with Mike Casten (<http://www.constructionconcepts.org/>), we broke the rule and showed



it to the project manager. He said we couldn't show the film to the crew because it clearly showed management was screwed up. Mike observed "The word is out; The crew is in the film."

Improvement possibilities were always obvious in the film and were supported by data. In most cases, I made no suggestion as to what could be improved rather leaving that to the team. Typically, performance could be improved by redesigning of the operation, altering logistics, applying different resources or by a counterintuitive shift.

Unfortunately, logic and common sense often weren't enough to cause action. Some other person or constituency had to approve the change: the superintendent, engineer, safety officer, designer, inspector, Dr. Zeus. I began to wonder if there was a solution space, that is a way changes in the operation would be acceptable if not advantageous to all parties. Once again, I called Professors Oglesby and Parker, this time to ask them to host a meeting at Stanford to explore the question. We invited five of everybody: general contractors, specialty contractors, superintendents, foreman, project managers, business agents, inspectors, engineers and graduate students, including Vic Sanvido there for a PhD. I have the picture to prove it. The idea was to use cases drawn from real life with the film and data. We broke into mixed groups after each presentation and challenged them to find a solution that was acceptable to all parties. We asked people to follow the advice on the mirror behind the San Francisco bar at Tosca Café at 222 Columbus in San Francisco. "Whatever you are, be a good one." (I can prove this story is true because the sign is still there.)

We asked each person to play their corner to their advantage, not to obstruct but to find improvements they could support. We set a time limit of an hour and were surprised when they returned early. Their ideas were clever and met the criteria. Their enthusiasm for the exercise was a surprise. A number said that they had never had a joint conversation focused on improvement before and they enjoyed the experience. And they wanted to do it again. So we formed something called the All Parties Forum. The group grew as it met regularly over the next 10+ years. We met once or twice a year with invited speakers and facilitated discussions. There was no particular focus or agenda beyond trying to answer the question, "How can we improve project performance?" Three of those meetings had particular impact on me. In no particular order except the last one-

Dutch Landon, the head of organizational development at General Motors began his presentation by describing his work designing socio-technical experiments. GM designed each factory as such an experiment in the organization of work, along with the roles and skills of people who did it. He apologized straight out because GM had used the approach on less than 20 plants (remember this was 30+ years ago and so no claim to numerical precision is offered here.). He was certain that companies represented in the audience, some of the largest construction companies in the US, must be much further along because they have managed so many more projects than GM had built factories. He was pulling our leg in the kindest way, making apparent that we were not using projects as conscious experiments in the organization and management of work. Plan-do-check-act.

And then there was the time Geoff Ball took sick and was unable to facilitate a discussion planned for the next morning (Geoff is well now and provides facilitation services. He is able to graphically capture complex conversations as they happen. (<http://www.geoffballfacilitator.com/>))



He called me at about 8 PM the night before to tell me not to worry as he had a replacement. Jerry Talley, PhD., a sociologist from Stanford who was to provide the program (Like Geoff, Jerry is a master of his trade; "Making the Complex Clear." (<http://jltalley.com/>))

Jerry brought a powerful simulation, "Build as many roads as you can." "Roads" explores managing the dynamics of groups under pressure. We loved it because it was about construction. Actually, not everybody loved it because managing those dynamics isn't easy. Significant post seminar work was required in the hotel bar to put Humpty Dumpty back together again. The meeting was a great success and Jerry became a friend I still rely on. It was his thinking that led to the development of "Work Mapping™" the tool we used to map the Last Planner® system (See "Process Mapping, Process Improvement and Process Management" in Paperback by Dan Madison)

The last topic of All Parties Forum was organizational learning. We met in one of those great upstairs rooms at Jack's in San Francisco. We struggled to get our arms around the problem but didn't come to a conclusion beyond agreeing that we didn't understand it. Glenn and Jerry and I were the last to leave. I was pretty down seeing no way forward. By contrast, Jerry was happy and excited. He said the problem was the lack of a language, a way to organize talking about learning. And he believed he had an answer. So Jerry and Glenn agreed to meet the next morning in my office in Mountain View. The meeting produced a graphical language he called Work Mapping™. This added learning to the input-process-output graphics. This gave us a way to map processes that connected physical or engineering aspects to the human tasks of managing and learning.

We used Work Mapping in the design of the Last Planner® system and still use it in seminar graphics. Glenn and I also used the tool to understand and improve various project systems - hydro test, weld inspection, steel and pipe installation, and subcontractor payment.

Back to the All Parties Forum: The power and possibility of collaboration was evident in every meeting. These meetings proved there was a place for well-structured construction-focused conversations with people speaking from a variety of perspectives on a variety of issues. These meetings ended about the time partnering began and I left the Bay Area for the University of New Mexico. And that is another story.

Job Opening

International architectural firm with a well-established healthcare studio is seeking a Principal for their Northern Calif. practice. Person must have extensive CA. hospital project experience, excellent client relationship performance and aware of leading design build modalities such as Integrated Project Deliver, Lean Construction, Evidence Base Design and Sustainability. Must demonstrate a successful history of staff development and client satisfaction in projects and consulting roles. Highly competitive compensation package and potential for ownership. Let me know if you are interested.

Looking for teams to present at CURT/LCI Summit



CURT and LCI are looking for owner/designer/contractor teams to tell their story at the 2nd CURT/LCI summit set for September 14. We are looking for reports on from teams applying Lean Construction principles and practices. Please let me know if you are interested or know someone who should be.

Articles on Lean

Dennis Sowards reports two more articles in SNIPS on lean in fab shops. He makes the same point about productivity measures in the second article.

http://www.snipsmag.com/Articles/Cover_Story/BNP_GUID_9-5-2006_A_1000000000001023709

&

http://www.snipsmag.com/Articles/Cover_Story/BNP_GUID_9-5-2006_A_1000000000001057813

Samir Emdanat and Digby Christian have fine article about IPD on the "IPDChannel:

http://www.ipdchannel.net/news-integrated_project_delivery_demands_new_ways_of_approaching_design_-7.html

Links that matter

Alan Mossman has compiled a directory of International Lean Construction Organizations:

<http://db.tt/0xozjL5>

Links that don't - another airport Folly:

<http://www.youtube.com/watch?v=VEp29GS1VXI>