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Lean Construction Interview with Gregg Howell

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Implementing Lean Marketing Systems

Gregory A. Howell is co-founder and managing director of the Lean Construction Institute (LCI), a non-profit organization devoted to production management research in design and construction. Howell brings 35 years of construction industry project management, consulting and university-level teaching experience to LCI.

Prior to his appointment as the Associated General Contractors' Visiting Professor in Construction Management at the University of New Mexico in 1987, Howell worked as a project engineer on heavy construction and general building projects and headed his own construction consulting firm for ten years. At UNM, Howell was honored with the College of Engineering Teaching Excellence Award. In 1994, the Associated General Contractors of America recognized him as its Outstanding Educator. He served as Eminent Scholar at the Del E. Webb School of Construction in 1996, and in 1997, Howell left UNM to co-found LCI.

Howell regularly addresses industry groups on the need for a lean production revolution in design and construction. His expertise in improving productivity has resulted in consulting engagements on power plants, petrochemical facilities, commercial and industrial buildings, and infrastructure projects in North and South America and Africa. Howell has taught in construction management executive programs in numerous U.S. universities, including his Alma matter Stanford, and in South Africa. He co-authored *Productivity Improvement in Construction* with Clark Oglesby and Henry Parker, published by McGraw-Hill.

Transcription of Podcast

Greg Howell: I could do a several-hour standup routine of really funny stories about this. I think in some ways, Lean is funny in the sense that it contradicts your normal way of thinking.

Glenn and I are beginning to think in a different way. We go out in the field, and we're working on a project. We see something happen, or we see somebody do something that's very counter-intuitive in traditional practice, and it lines up with what we're thinking, and we realize that this has helped us move forward.

We did not start off to adapt theory to practice. We started off looking at work. We saw patterns there, and then we realized that there were underlying conceptual explanations that could help us. It's not like academics sitting inside a room, reading books, thinking it up. It's the other way around.

Joe Dager: Welcome everyone. This is Joe Dager, the host of the Business 901 podcast.

With me today is Greg Howell. He is the co-founder and managing director of the Lean Construction Institute, a nonprofit organization devoted to production management research and design and construction. Greg has 35-year construction industry project management and consulting experience. He is a popular speaker on the need for a Lean production revolution in design and construction.

I enjoyed his keynote at the Lean Software Systems conference this past May, and it interested me enough to find out more about what is going on with Lean in the construction industry. Greg, I'd like to thank you for being my guest. Since you're one of the founders of the Institute, could you give me a little history of

when the marriage between Lean, and the construction industry took place?

Greg: It was a long dating period where we got to know one another.

Greg: Lean in Construction developed out of the traditional practices in productivity improvement in construction. I was involved with that. It's a great, long story. Beginning in 1979, I meet Glenn Ballard. He and I have some suspicions about traditional project management.

In the middle '80s, we get a job writing a new manual for Foreman Planning. It's an old idea that if foremen made better assignments, the world would be a better place. Those were written. Glenn and I thought about it for a while, and he came up with the idea of measuring the performance of the planning system.

How well did the planning system predict the condition of the job one week in advance? The answer was 54% of the things on a foreman's weekly work plan were actually completed during the week that they were assigned by the foreman, as understood to the foreman. The problems were logistics and coordination.

We began to invent a planning system that dealt with that. We ran into the Lean world, in some ways, around the idea of the andon cord in manufacturing. We knew about Lean in manufacturing, but that's always over there, and we're over here.

What we realized was necessary to make good assignments was that somebody had to quit making bad assignments. That person was the foreman. We said; if you want to quit making bad assignments, just say no. We joked about it as the Nancy Reagan approach to planning.

The idea was that the foreman was in the best position to determine if that work assignment could be completed. We were just talking about me being in the Seabees. The motto is "can do." The idea that a foreman would say "no" is a deeply radical act. It reminded us of stopping the line in manufacturing.

Before LCI starts, there are a group of people get together 20 years ago this year in Finland. There are five people went to that. That was the International Group for Lean Construction. You can find that at IGLC.net. We have a conference somewhere in the world every year, San Diego this one. IGLC was a very academic line, and Glenn and I were involved in that. Him from the first, I came about a year later.

About six or seven years later, Glenn and I are flying back from working with some early ideas of the Last Planner on a refinery in Venezuela. Glenn said, "This really is a conceptual problem, and we ought to figure it out." We decided that evening to go out and see if we could get some construction companies to give us enough money to buy some space that we could get to work and figure it out. That was the foundation of LCI.

We backed into Lean through the idea of saying "no" rather than releasing a defective assignment. In some ways, that's the key to understanding the difference between Lean in manufacturing and in construction.

The question is what causes work to move from one specialist to the next? In manufacturing, it's mostly the way you design the line. In construction, it's the administrative act of making an assignment. If that isn't under control, your project isn't. That's the quick history of the whole thing.

Joe: The Last Planner system came before Lean Construction Institute. That is really what drove Lean and construction together in your mind.

Greg: Yes. We started off to make a planning system. Once we saw the numbers, 54% planning reliability, which was both shocking and sounded about right, it was pretty overwhelming, actually. So, we began to develop a planning system.

Our initial objective was relatively modest. It certainly was modest. We wanted to develop a planning system that would produce predictable workflow and rapid learning. We didn't connect that in the Lean world at the time.

We were certainly influenced by Goldratt, in his book, "The Goal." He has the simulation there, the parade simulation, with the dice and moving the work through that by showing the effect of dependence and variation on system performance. That's really what put us into that world. Then, once we had that idea, we could go read those Lean books, and we could translate. Once we understood what caused work to move, that opened the door to everything else.

Joe: You talk about rapid learning. You talk about iterations. I look at this Last Planner system. It's something that developed in the late '80s, early '90s; I think, was where the beginning of it is. You can correct me. Nobody talked about "iterations" back then. "Iterations" didn't become the typical word until the last couple years. Now we say it all the time. Were you really doing it back then?

Greg: Yes. I think the easiest way to translate it into the Lean world, how it happened, was this idea of countermeasures. We ran into this problem. It was this unpredictable workflow caused by the inability of our planning system.

We invented a countermeasure to that, which was the Last Planner system. Initially, that was just a one-week thing where we did a better job of making sure that we had the wherewithal to do the task. We could do that.

Pretty soon, we could make predictable workflow, but we didn't know if we were making the right work predictable because that was out of the critical path schedule. The critical path schedule was never in a good enough shape to inform the granularity we were working at. We had to figure out how to get through that.

Another countermeasure came up, which we call "Pull Planning," where we get the people together on a sticky wall and figure out how they're going to manage the work in the coming period. Now we understand that as production system design.

That's where we actually thought through where are we going to stack the plywood, how are we going to move that in there, all those details that are not captured in the sequential critical path schedule? It was just; we got this problem solved, and then we got, "Oops! How do we do that?"

The next big problem that really moved, we'd be in these planning meetings, and one contractor would say, "It would help me a lot if some other contractor did this work in advance."

The other contractor would say, "We could do that, but it's not in our contract, and it'd cost me a dollar. So, I'm not going to do it."

The first contractor would say, "It would save me five dollars. Are we crazy?"

The answer was "Yes!" That's when we realized that the ability to move money across boundaries was what limited our ability to innovate. You just have a series of cycles like that, small cycles in the Last Planner, next larger cycle with this Pull Planning, and the next larger cycle at the project level. All of a sudden here we were; like, all of a sudden, 15 years.

Joe: How does the name "Last Planner" relate to the planning system?

Greg: There's always somebody who is the person who makes an assignment. Lots of companies say, "Why don't you call that Foreman Planning?" The reason we chose a different and outside term was we wanted to talk about the function. That is the last person who makes an assignment, as opposed to the necessary position within a company. Because sometimes it's the foreman, sometimes it's the general foreman, sometimes it's an office.

Calling it "Foreman Planning" would in a way blind people to the real function of this person, so "Last Planner" seemed like a good idea at the time. That's why we chose it. We wanted to distinguish it from traditional positions in construction.

Joe: You talk about Pull Planning. Can you help someone get their arms around what Pull Planning is?

Greg: Sure. There are two ways to advance stuff on a project or probably anywhere. One is by push where you advance stuff based on some schedule. Whether or not the project is ready for order or not, the schedule says this should be delivered to the site, and so we deliver it.

Pull is when you advance stuff when the site is ready to use it or the next station is ready to use it, and in that case, you signal from the work site, and I'll use that because that's where I live. You signal back to the logistics chain saying send me the beams, and that's a request. A pull signal can be understood as a request, and something that really informs our approach to Lean management is something called the language action perspective, and I won't go very far in this.

There are some actions that we take in language. I make a request. You asked me if I would do this podcast. I made a promise. We set a time. We set conditions that it would be done in about 30 minutes, and so you made a request, I made a promise. It will reach a point, I'll say I am done, and all of that speaking is the action. I request is the action.

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When we begin to think about pull as a request, then we understood that we were designing a system that fundamentally was promise centered. You can say we're designing the production system. You can also say it another way, we're designing a project as a network of commitments, a series of request promise cycles that are designed to deliver the big promise that somebody made to a client.

So that's where that language comes from, and there is a significant body of knowledge about that. We think it's a more important approach to --I'll call it human resources - than the kind of traditional motivational approach. We think people do their darndest to do what they promise and if we can learn to speak more clearly and listen more sharply for requests and promises, we can do a much better job.

Joe: Is this the difference in Lean? When you use Lean, the plan is the pull. It is the heart of what makes Lean work in project management?

Greg: If you wanted to draw a line down the page and say traditional project management on one side and Lean on the other, the traditional project management is focused on activities and pushing people to get those done by a certain date. We're focused on flows instead of activities, and we're focused on the use of pull to create flow in projects.

Joe: The construction industry is driven by project management. Is that how Lean is introduced into the construction industry, managing a project and how to go about it.

Greg: Well, we sort of played work up. I mean, we were originally in the productivity improvement role, which was actually tried to improve the performance of one activity, placing concrete, for example.

And we eventually realized when we began to create predictable workflow on a project and rapid learning, and then that pull planning I was talking about; we realized that we had a different strategy for managing a project.

We're trying to optimize the project, not the piece where traditional project management proposes you can pressure everybody to optimize their piece, and that will, therefore, optimize the project.

There is a big difference then between how we think about projects actually work, and when David Anderson introduced me back there in Boston, he surprised me by saying that he had been struck by this paper that Lowry Caspel and I wrote back in, I didn't know 1992 delivered to the Project Management Institute in a respectful way.

I am not disrespectful to them at all, but the title of that paper was The Theory of Project Management is Obsolete, and that's what we were speaking to was this idea of shifting the focus from activity to flow and shifting from local to global optimization were the two issues that were highlighted in that paper. I had sweaty palms for sure when I did it.

Joe: When doing the research for the podcast I was looking at things, and this was in 1990, in 1992, and these little thing's people now are just talking about in 2005/2006, getting away from Waterfall, let's do Kanban, let's do Scrum. Scrum and agile has been around a while, but you were writing about this in the early 90s.

Greg: That's a nice compliment. My experience of living through this has been more groping in the dark than following a clear path.

You know; it has been a series of a kind of just trying to stay focused. Maybe the easiest way to say it is what really got us

going was that we really were focused on looking at the work itself.

We said, look, if we can get the work right if we can figure out how to manage the work for the minimum amount of energy, the minimum amount of cost, the minimum amount of all that, as a project level, then we can conform with organizational issues and commercial issues around that. We thought common sense would prevail, and so in some ways; we are classic out of the Lean playbook of going to Gemba and going to look at how the work is actually done, and coming to grips with that.

It took us a long time to understand what we were doing. I think we knew we were on to something, but you have to understand; we were calling for a big revolution in a very stable industry. The more we learned, the more challenging we became to the status quo. Like I say, we're not disrespectful of that, but we began to understand that there was just a better way.

I used to tell people that we were either crazy, or we might be, right? And it was hard to tell for a long time.

Joe: Well, the construction industry has so many different fields and diversifications. Certain segments, such as the building industry, have embraced these concepts more so than others.

Greg: The building industry, as opposed to, say, the heavy highway industry? The building industry has far fewer traditions of production system design than the heavy highway kind of work. The highway and bridges and all that, we've often thought about how big a pile of gravel did we need, and how long are the poles, and what's the timing for the scrapers and all that sort of stuff. Those are production system design ideas. In civil engineering construction, they are not uncommon.

The idea of the precision and predictability and the ways in which we think about them, I think, add to that industry. So it's true

that probably most of the Lean construction work is in building now. Though you go out and look at what's in a modern freeway, with the amount of electronics and stuff that are underground there, and you begin to realize it's not just like piling dirt up, compacting it, and paving it, as it used to be, so that role is beginning to open up to us.

Where most of the action is right now is in projects, which are complex, uncertain, and quick, like hospitals, where the rate of technology change in the delivery of healthcare is very fast, the cycle time of that is faster than you can design and build a hospital. So how do you keep your options open as long as possible to bring the latest in technology and healthcare management into hospitals while you're designing and building them?

Having said that; it's also being used to build social housing in northern Nigeria very effectively, so it's all over the map. I think the center of action in the United States, is healthcare for sure.

Joe: Has the adaptation of Lean plateaued in the construction industry or is it growing?

Greg: I said it's going off like a grenade. Either that or the world is spinning faster; I'm not sure which it is. The demand now for our training, for the LCI to provide services is really growing. We just reconstituted our board because of that, and we're really stepping up that action.

But I'll give you an example: in the last week, I've been invited to do a seminar in Lima, one in Quito, Ecuador, and three in Colombia. I'm going to see if I can put all those together and go down there. I love that kind of work. When they're starting to ask for seminars in three cities in Colombia, there must be something happening in the world.

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Joe: How do you introduce Lean to, let's say, other disciplines of the construction industry?

Greg: We actually aren't very evangelical. We were trying to figure it out. We like it if people try to pick it up; we try to make it available. We haven't really set out to go, in a way, after those various markets. I think our feet are more firmly planted in research than they are in marketing, and we've left that to the industry and the consultants to go do that.

The way I do it, wherever it would be, is to go out and go work with the companies in that arena and go out and look at the work and try to understand what are the constraints, what are the sources of uncertainty, and begin to understand how we might shift from these practices to something better based in theory?

Joe: Can you tell me a bit about the Lean Construction Institute? Is it your typical trade organization? Or how is it structured?

Greg: We are a 5013C or whatever that is, not for profit. We were founded to develop and disseminate new knowledge regarding the management of work and projects; I think that's out of the corporate documents. That's what we set out to do.

For a long time, it was Glen Ballard and I and a few kinds of continuously growing set of both academics and practitioners. We kind of just kept doing it. My wife kept the books; we were a small group, and it wasn't very complicated. In the last few years though, because of the demand, particularly since, I'll say, 2004, 2003 when Sutter Health decided to deliver their six billion dollar program on these protocols that was when things really began to take off.

We really -- how do I say this politely? -- failed to respond effectively to the demand. We got way overloaded. We realized we were in a crisis mode, administratively, about two and a half years ago.

The board got together. They went "oh my God; it's God; it's worse than we thought," and I said, "yeah, you're probably right." So we got together again after that, decided that we needed to hire, get an executive director that would handle the kind of administrative side and all that. Dick Byers stood up, and he's done a great job.

The goal was to reconstitute the board and to rethink what LCI is. We did that over the last year and a half. We now have a board made up of three clients (owners if you will), three general contractors, and three designers, architects, and engineers, three specialty contractors.

Jeffrey Liker has agreed to be on our board. We just had our sort of new constitutional meeting there in St. Louis; last week was how recent that is. So now we're trying to put together a really longer-term strategic plan and think about the constituencies we serve, and how to do our job.

Joe: How can someone learn more about the Last Planner? Are there classes, webinars taking place?

Greg: Well, we have some training in Last Planner, and there's a fair amount of material online.

You can go to the LCI website, leanconstruction.org. We're trying to get those materials all made publicly available now. We're having some problems because of the historic nature of our website. There are also a lot of videos on that website that you can see there as well, and there are some papers and documents that are available on the topic as well.

One way is, you can go read about it, and learn about, it and then go implement it -- or the alternative, which works just as well, it takes longer, but it might be better, is go invent it yourself.

That is, go out and collect a weekly work plan, and see how well that weekly work plan predicted the condition of the job next week. You'll find out that the bunch of tasks didn't get completed. So you say, "Why didn't that get completed?" Ask that question five times, so you get down to some kind of root cause. Then, set in place a counter-measure so that never happens again.

Eventually, you will run into the problem that the planning you can make predictable work at the ground-level, but you're not sure you're making the right work effective, because you don't really know how it connects to the larger project schedule -- so you'll invent that planning system there in the middle, and you'll build it from the bottom up.

I mean, it can't be that simple. Digby Christian says it's "the hardest simple thing" you'll ever do. You can do it from the ground up. It takes longer, and it takes the discipline not to make excuses, to say, "Well; Charlie's a good guy; we're not going to count that."

There are two ways to go at it.

Joe: Is there an actual software package for the Last Planner?

Greg: We don't think you can automate judgment. There is software out there that can record what the system is doing. Where software really helps is in keeping track of all the logistics.

There's some very sophisticated software. Strategic Project Solutions has something that you need if you're going to use Last Planner on building a refinery, or a liquid natural-gas facility or something like that.

DPR Construction has just released another version of a kind of Last Planner supporting software. I'm sorry I can't recall the name of it, but I bet if you go to DPR's website, you can find out about that. Dean Reed is Lean Construction Institute member #1

and has been a long advocate in this world. He's led that development in that company, and we think that's a good idea too.

We're really not particularly a commercial enterprise. We think it's best to leave that to people who know what they're doing.

Joe: How can someone participate with Lean Construction Institute?

Greg: Oh, send us money!

Joe: The easiest way, right?

Greg: Really, that's a great question for me, because I've left out something important. What's been the most surprising and maybe wonderful thing about this is how open the Lean Construction community is.

What happened first at Sutter is that people who were trying to implement it would get together once a month, somewhere in Northern California, have a burger and a beer, and talk about what they were doing. Different companies would come together and share their experience, and talk about how they dealt with this problem or that.

That set of ideas has begun to develop now. One of the board's goals is to have a community of practice in every major construction market in the United States.

So there's northern California; there's one in Chicago. There's one down in the Carolinas. I think there's one going in Atlanta. There's one starting up in New York City. There's a great one down in Dallas, Texas. There's a good one in Phoenix. There's one in Los Angeles.

These organizations have monthly or bi-monthly meetings where they get together, and they usually have a presentation by

somebody out of their community that says, "Implementing Last Planner on a brewery," or something, I don't know.

They present what they're doing, and then they have a conversation in the community.

LCI, my view of LCI is that whatever change happens in the industry will be facilitated by the associations within the industry. The AGC, the AIA, the Construction Users Roundtable, and all the various trade associations out there have constituencies that will be affected by this.

I'm thinking if we can get those associations together to co-evolve together we can speed whatever happens. LCI itself is really not an association in that sense.

We don't have a constituency. We're more like the Green Building Council or somebody like that's advocating a process or a set of ideas, and we welcome anybody who wants to be in that game.

Joe: Is there anything that I didn't mention about LCI that you would like to?

Greg: I guess there's something I wish I'd said about this. I think we're developing a kind of coherency in this approach we have now. Traditional practice is coherent. It all fits together, and it fits together in the way it connects with say the insurance industry and the logistics industries and all that. It's all a piece.

One of the big areas where the industry is not yet lined up with us is around issues of insurance and bonding. That industry is really turning around now and trying to figure it out because some of them have come to realize that their understanding of where risk arises is different from ours.

Traditional project management says, "Things go bad because we hired the wrong person," or "Bad things happen to good people."

We can show that risk arises from the way we manage the work, by how predictable the workflow is a good example.

I guess I suggested already the international scope of this, which is quite significant. Lots of this is going on in northern Europe and lots of it in Australia, lots of it in Peru and South America, in Chile and Brazil. That's happening.

Joe: Is there anything that's coming up? Do you have a trade conference or anything else that LCI puts on?

Greg: There are two big conferences coming. One is this year the International Group for Lean Construction is going to meet in the United States. That happens once every four years. Last year, it was in Lima.

I'm going to make a plug. Normally, we have an industry day before the academic two or three days. Normally, we have 30 or 40 people wherever they've been in the world, practitioners who showed up for the first day. In Lima, 500 people showed up for industry day.

Joe: Wow.

Greg: That's kind of what's happening. The International Group for Lean Construction is meeting in San Diego. You can go to IGLC.net or just probably hit IGLC 2012, and you can get the website for that. You can see the program and what's happening there.

Then in October, I believe I've got that right. In October, the Lean Construction Institute is holding its annual meeting, and it's going to be near Washington, D.C. this year. It's going to be over and just across the river in Arlington this year. We're expecting a very large turnout for that.

We set that back there because one of the really interesting areas where I'll say the edge is here in Lean is around how do we do

this on projects where government contracts and management practices, let's see how to be charitable about this, aren't the most effective.

Many parts of the government are working to figure out how to do this and bring it in. But we thought we might as well go near the seat of power there and see what we could influence in that area.

Joe: What's the best way for someone to contact you? You mentioned your website and...

Greg: I'm always pleased to be more completely overwhelmed by email. My address is ghowell@leanconstruction.org. I'm glad to hear from them and point them in whatever direction I can make connections.

I think my job; my personal job is to connect people and ideas. That's what I'm trying to do. It's been great fun doing it.

Joe: I think it's a great conversation here, and I appreciate it very much. The website for LCI is leanconstruction.org. If we haven't mentioned that before, I would like to thank you Greg, and I enjoyed it very much.

Greg: Well, Joe thanks you for the opportunity. Great fun.

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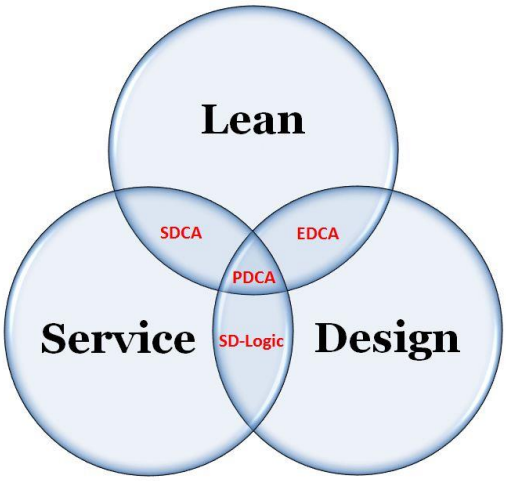

Lean Service Design Trilogy

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Joe Dager is president of Business901, a firm specializing in bringing the continuous improvement process to the sales and marketing arena. He takes his process thinking of over thirty years in marketing within a wide variety of industries and applies it through Lean Marketing and Lean Service Design.

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