

What can go wrong, will go wrong – How the thinking in the construction system drives errors in, not out.

By Alisdair Kerr



Beyond Command and Control...



The construction sector fails its clients by systematically delivering projects late and over budget. What's more concerning is the improvement initiatives that have been tried are actually making things worse not better and costing more not less! What's missing is a method that tackles the deeply rooted systemic causes of its problems.

The whole sector is specification driven, instruction led and inspection informed. On the face of it, these things may seem good, even necessary, to give clients, lawyers and financiers of the construction, peace of mind that their outcomes will be realised but the SiCi cycle (Specify, Instruct, Comply & Inspect) does more harm than good. Let me explain why.

The SiCi way of thinking institutionalises the current sub-optimal approach. It designs in its own particular kind of "Failure Demand", a failure to do something or do something right first time. It cements in high levels of waste work throughout the core and support flows. It strangles and starves the system of knowledge to deliver real, effective change.

Russell Ackoff once wrote in his book Redesigning the Future

"The righter we do the wrong thing, the wronger we become. When we make a mistake doing the wrong thing and correct it, we become wronger. When we make a mistake doing the right thing and correct it, we become righter. Therefore, it is better to do the right thing wrong than the wrong thing right. Most of our current problems are the result of policy makers and managers busting a gut to do the wrong thing right."

Getting the right thing wrong is better than putting the wrong thing right."

I have worked in the construction sector a number of times in my career and been afforded the opportunity to help organisations gain a view of the applicability of the Vanguard Method in construction. As with all potential change, it should start with knowledge of what is happening and why.

During my time in the sector, my clients and I have learned that there are key elements that go wrong and predictably so. Irrespective of the size, contract type, purpose of what is being built or type of construction, we have found numerous issues that inflate the cost, infuriate customers and workers and make leaders irate.

The seven deadliest of these sins are as follows:

- RE-design
- RE-work
- RE-pair
- RE-schedule
- RE-cost
- RE-bill
- RE-tender

If a job worth doing it's worth doing at least twice!

As with most leaders I work with, it is not uncommon to hear them profess they are connected with work and know how work happens. Understanding why they think they are connected, because in reality they are not, helps when something that was not previously known is learned. It is an opportunity to reflect on the current methods of connecting managers with 'the work'.

Leaders typically request the Superintendent commonly known as Supers (a management position in the hierarchy) of a project to come along to a meeting, either at head office or on-site. This request is made formally through their hierarchy. Another approach is the "Site Walk", where the leader is shepherded around the site with local management informing them of where the project is vs the plan, catch back programs (deviations from the plan that needed rectifying) and next steps.

A variation on the site walk is to visit the Project Management Offices (PMO) where they would hear about all of the above but from the comfort of a nice warm office. The walls of the PMO would typically be covered with presentations, schedules, safety slogans etc... together with projected benefits of "Value Engineering" initiatives to reduce delivery costs. However, in my experience "Value" is never defined "Outside-in", from the client or final owner's perspective. It is more typically informed from the contractor's view of what is important to them, i.e. optimising their profit.

Observing such visits, I often caught myself thinking about this quote from Taiichi Ohno, the father of the Toyota Production System

"When you go out into the workplace, you should be looking for things that you can do for your people there. You've got no business in the workplace if you're just there to be there. You've got to be looking for changes you can make for the benefit of the people who are working there."^[1]

A word of caution, change without knowledge is tampering. Change informed by opinion, even when it is the opinion of the people close to the work, has no grounding in science, e.g. "the team's hypothesis is that by removing these steps and carrying out this work when talking to the customer, will eliminate customers chasing response and reduce the end-to-end time dramatically". Without data how would we know if their solution had worked or whether they were acting in the right place?

Grounding ourselves in shared knowledge about the cause of issues means there will be alignment in how the world is viewed and clarity about the right thing to do.

To enable clients to come to their own conclusion about the applicability of the Vanguard Method in construction, we and they must "Study". Importantly, the study cannot use the 'dog and pony shows' described earlier.

We want clients to understand the thinking that governs performance is a systemic issue in the sector. Typically we ask them to select various projects that are representative of their portfolio.

In construction, I have helped leaders study projects that ranged from small low value to vast multi-million/billion ones that surpass the GDP of the small nations.

It is critical that while studying all the leaders take the same perspective and that must be solely from the right-hand side of the table below -

Command and Control		Vanguard Method Thinking
Top down, hierarchical	Perspective	Outside in, as a system
Functional specialism	Design	Demand, What Matters, Value, Flow, Expertise
Outputs, targets, standards: related to budget	Measurement	Capability and variation: related to purpose
Separated from work	Decision Making	Integrated with work
Contractual	Attitude to customers	What Matters?
Contractual	Attitude to suppliers	Co-operation, mutuality
Make the number and manage people	Role of Management	Act on the system
Control	Ethos	Learning
Reactive, projects, and plan	Change	Adaptive, Integral, emergent
Extrinsic	Motivation	Intrinsic

Perspective – Outside in, as a system

Firstly, what is a system? A system is a set of things that are interdependent and the way in which they interact will produce its own pattern of behaviour. The easiest example of a system is the human being. All the parts of the body are interdependent and each of the parts can have an effect on your behaviour. The way your heart affects you is dependent on what the lungs are doing, what the brain is doing, so on and so forth, and as a result, the system can't be divided into individual parts.

The importance is that the defining properties of the system cannot be achieved without the whole of the system. A simple example is that you can write, but your hand can't write. To demonstrate this simplicity, cut it off and see what it does, nothing! Therefore if you take a system apart it loses its essential properties.

Construction is made up of lots of skilled people carrying out activity normally that end up producing an end result. In the current design, these skills are divided up into trades and the tasks undertaken are allocated accordingly. Using the above example, the trade that carries out the groundworks doesn't produce the end result and neither does the electrician that passes the electrical circuit fit for use, it is the product of the whole that delivers its essential properties.

So how well was the system acting as one to deliver outcomes for customers?

It's normal when studying the work, to find workers waiting for management to tell them where they are to go, as there were other trades in the space that they had planned to mobilise themselves in.

We found workers having to formally request tools, plant, equipment and materials for work they were already on or looking to move to next.

Workers seeking sign off and approval to situations that couldn't be built as designed, finding something that wasn't on the plan or that something had been erroneously installed where their work was meant to go.

What was evident was that each element involved in the construction process was run on traditional Command and Control principles (the left-hand side of the framework above). Regardless of contract

type, the top-down hierarchical approach was plain to see. The obvious requirement is for unity as work flows across silos but as each trade that delivers the whole tries to maximise the benefit for their own good, the wider system suffers.

Often you would hear management speak of how their sub-system was driving them in order to meet their own financial/staffing requirements. This made visible some of the system conditions, i.e. conditions which limit, constrain or in other ways control people's behaviour which resulted in sub-optimisation.

In construction, there are various contracting methods and some of which exasperate the behaviours of the system more than others.

Despite the top-down hierarchical approach, the leaders of the system typically felt as though they were also constrained and had in most cases adopted a 'victim' mentality. This attitude led those working in the system to feel totally constrained and so ignored, couldn't see or comprehend opportunities for change and improvement.

Design – What Matters, Value, Flow, Expertise

A top-down hierarchical perspective always leads to work being divided up into functions. The flawed logic being that specialised groups of workers will provide better control. Leaders often articulated that they had seen their part of the system was broken down into functions such as bidding, estimates, finance, operations (broken down into two streams; project management and work), IT, HR etc...

Each function will also have its own hierarchical structure and functions complete with their own targets and objectives set by the leaders. Not only this but their own processes and policies designed/implemented by the managers that in turn govern what workers can do. While the intent was improvement the design and execution caused sub-optimising of the whole.

It is 'normal' to see a system broken down and managed in its constituent parts. In construction, it is typical to find sub-contractors designing their organisations to mirror those of the general contractors they work for. In fact, the sub-contractors also tend to develop the same system conditions, policies and process which in turn further sub-optimisation of the system as a whole. All too often when studying construction systems I have observed players on either side of the fence tally counting wins and losses.

There is rarely any evidence of a systematic and systemic approach to understanding what matters to the client. When it does happen the knowledge gained does not inform the work needed to deliver and create greater value. There is also little appreciation of what value work looks like, what failure demand is and that the resulting "7 Re's" is wasteful activity. Never have I witnessed companies question the need for a particular process, all flows are deemed necessary even if they are there to deliver one of the "7 Re's". No one questions the system's ability to have the right people in the right place at the right time to deliver for the client in the optimal way.

After a meeting with a client who talked about the issues he had experienced with all aspects of construction, one of the managers I was working with uncovered what was important to the client. The space they were building was to be used as an art gallery. A great deal of importance was the finish in the spaces that would be seen by visitors and be attractive to those with collections to display.

Upon leaving the meeting we headed over to the gallery to see "Finishing" trades to understand what they knew about the final use of the space they were constructing. It was a conversation with the floor tiler that grabbed the leader's attention. This tiler and his team knew nothing about what the

space was to be used for, or that the finish mattered so greatly to the customer. What he did know was that their ability to deliver a finish they would be happy with was being compromised by the concrete pourers' specification. The concrete sub-contractor had been afforded a wide tolerance that left the tiler millimetres to work with. He said...

“This is my shop window, if you come down here and look at this floor you will see the wave. If the concrete guy was to pour to a certain depth and I was to apply a compacted sand screed before laying my tiles the finish would be perfect, the customer would be ecstatic and I would have people being recommended to me.”

Finish was important to the tiler too as he said it was his “**shop window**”. One of his major acquisition processes was word of mouth, obtaining new contracts through referral. The current approach of SiCi was not only impacting the contractor's ability to generate revenue but the tilers too.

On another site painter was applying the finishing coat to a wall. Above him work being carried out to install the ceiling. The manager I was shadowing asked the painter how this was likely to affect the work he is doing. The painter stated that this sort of thing happens all the time and that he could end up 're'-working the same sections or spaces a number of times before the owner accepted the work.

This is typical of what I have found everywhere in construction in the sector. Whether it is a rebar installer who has to RE-design and RE-work their bar positions for groundworks or sleeving, an overhead pylon erector waiting on the RE-design of the footpad to cope with a 100 year wind, a framer of drywall having RE-pair damaged frame hit by scissor lifts and skyjacks. A HVAC “*tin banger*” RE-designing their route as other services are already in position, a gang of gas engineers having to RE-schedule a job because the traffic management plan isn't in place, or a conduit runner RE-costing the design forced on them due to the wider system cost reduction requirements, they all were challenged by the seven deadly REs'.

Within the sector managers in the general contractors often refer to some of the trade organisations as “friends”, meaning they frequently work together on projects. However, I'm sure the companies concerned would say ‘With friends like that who needs enemies?’.

This exercise of connecting with clients, understanding what is important to them and how the finished project has to perform helped leaders adopt a different way of thinking. A way that allows them design and manage work differently which creates a system that constantly improves service for the client and their own system.

Having studied their system the leaders understood their time had been spent dealing with issues that were of their own making. More importantly, they could see how the constant phone calls resolving client complaints and endless meetings smoothing out issues with sub-contractors could be eliminated by adopting principles on the Vanguard Method.

Measurement – Capability and variation: related to purpose

At Vanguard, when we talk about the importance of ‘measures’, we talk about it from the position of value. The definition of a measure is it assess the importance, effect, or value of (something). Just as the perspective must always be outside in, so the measures have to be derived from that perspective too.

Measures must be looked at in capability charts as these will inform a systematic view of what is normal and predictable about the performance. Identification and action on the systemic causes of variation will result in improved performance. Through their study activities the leaders will learn that

their current assumptions that have created the problems and that replacing these is what will improve the system.

During my time in construction, our approach taking leaders to the work and studying it from a different perspective always exposes the culture of managing by numbers. The numbers that are paid attention to in construction tend to be financially related, regardless if it is internally or in a sub-trade.

These 'Lagging numbers' are rooted in how the work is won. In estimating, the estimator uses a schedule of rates to develop a cost to complete the work. The trades may be invited to bid on the work, which means working out their costings in line with the specifications of what has been interpreted, of what good would look like to satisfy the client and any legislative requirements.

Bids tend to arrive in a deluge just before the closing bell on a date determined by either the customer or the main construction firm (depending on the contract type). Trades may be picked based solely on price or on consultation with those that have worked with the trade in the past, whether that is the client or the main construction firm.

This method does not look at or attempt to understand performance against purpose i.e. ability to start on time and finish on time, or deliver reduced variation against a nominal value^[2] as set by a following or preceding trade. It has no understanding of the variation in performance or the factors that contribute to that variation.

In contracts where there is a main contractor, the client sees the constructor as the "expert". As the "experts", this type of knowledge could be used to help clients make an informed choice about what is value to them. Selection of the sub-contractor who will carry out the work is based solely on a 'good number'.

In one bid closing that we observed, a bid was received that was dramatically lower than any other supplier, this is known as 'buying the work'. A manager called them to check that their bid had covered everything in the specification. Before the call, he told the senior leaders who were studying the work, that "*they*" don't like to tell trades that their number is low or high. Within the first few minutes of the call that was exactly what he did. The manager opened the call with the sub-contractor by saying that they had received their offer and wanted to check that the price submitted covered all of the work. The manager asked a few construction-specific questions in an attempt to flush out if the contractor had adequately understood and priced the work. After querying a few elements of the bid, the manager accepted the bid and set about trying to get another sub-contractor who he "*felt*" (key word) was more competent, to lower their submission in order to win the work.

Data was not being used to make decisions about the sub-contractor capability to deliver and in fact decisions were being made based on emotive perceptions and price.

During my time in the sector it was normal practice to see senior leaders hold weekly meetings to determine "*what margin shall we will make*". Typically these meetings would take place on a Monday morning. Those that prepared the spreadsheets and slide decks that padded out this meeting gave them nicknames, the best of which was "Monday's money meeting". These meetings are often attended by the head of the contract administration, the CEO, leaders from finance, risk and sales plus the leaders from the operation.

Of course, the game had already been played at the weekend or on Friday before the weekend began. The game was to 'make the numbers', for example by shuffling money around in the P&L, holding back gains vs plan, and charging resource against other projects. As before, a normative learning loop of studying the work opened the leaders eyes to vast amount of time being consumed to 'make the numbers look right' ready for a Monday. There was no use of capability data or conversations about the causes of variation. The data being used to develop

costings was based on what managers thought materials and labour **'should cost'**, not what materials and labour **'does cost'**.

During my time I have witnessed invoices being received in finance teams and being recorded according to what made the P&L 'look right', only for them to be re-allocated correctly at a later date. This further added to RE-work with toing and froing between teams so the numbers look right for Monday. Sometimes this resulted in sub-contractors having to RE-bill!!! When the client or their representative walked the site to review work vs the plan, it frequently resulted in a mismatch that, once revised, meant RE-scheduling and RE-billing.

Onsite Supers could be heard asking trade foreman, (another level of hierarchy), "How many drywallers have you got in today?" With the information gained, back in the office the Super can be seen equating the number of drywallers to square meterage of drywall to be achieved today. Without seeing the work or the right context, the Super does not know if it is the right drywall, in the right location and at the right time. Nor does it provide insight into the next trade's ability to end on time. Again, the thinking of cost, price per unit in this instance, causes costs to rise.

When it's not the right drywall, as it often tended to be, this work takes longer. First the old defective drywall has to come down and it is not just the drywaller affected by the issue; this has to be disposed of, new drywall, tools and equipment need to arrive and then the resource has to carry out the work. All of this is eating up the capacity of the system to do value work, increasing costs and destroying morale (and drywall!).

Decision Making – Integrated with work

A common assumption identified during a system study is that "Managers know best".

Work plans are always created by managers and, more often than not, the method of achieving the project milestones is designed by them too. Every study I have undertaken in a construction system has established that workers have the greatest contribution to making the plan work. Yet when issues with the plan are identified or the problem is fed back up the hierarchy to be rectified by management, those workers who have tried to solve the problems themselves speak of having their "*fingers burnt*" when they do.

In the back office too, how work is to be done is specified by management, as are the service level agreements for activity and to complete the circle who does what is, *you guessed it*, specified by management.

At all times, in all functions and in all activity the unspoken mantra is "Managers knows best". This equates to, the higher up the hierarchy you are, the more knowledgeable you must be and therefore the greater weight your decisions carry.

On sites, we frequently find trades will arrive at the planned location only to discover they cannot carry out their tasks for a variety of different reasons. Upon speaking with them it was understood that it happens all the time and that they needed to wait for their foreman to talk to the main contractor, who would come up with a plan or would find another area to work in.

As mentioned earlier, the Monday meetings were focused on financial targets, and thus decisions about how these numbers will be achieved are taken by managers from the perspective of their particular silo resulting in wins and losses.

As mentioned earlier, the Monday meetings were focused on financial targets, and thus decisions about how these numbers will be achieved are taken by managers from the perspective of their particular silo resulting in wins and losses. The losses have to be made back somehow. Current thinking drives people in the back office to cheat: to present the numbers managers pay attention to, thus further deepening the hole of trying to get to 'the wrong answer to the wrong problem'. These are not bad people, it is a bad system.

During my time in construction, there were instances on a site which did show sign of promise, it was simply in the wrong place in the flow, take the following for example:

On one rooftop a trade identified an issue with the way a gigantic skylight frame was going to connect to the building. The issue wasn't so much the connection from a technical point of view but from a purpose point. The connection was not simply going to connect the two structures (stone wall and metal frame) but it also had to provide a seal that prevented draughts and rain from entering the building. The worker had noticed in his specified instruction, the request to use a certain type of clamp that simply wouldn't do the job. He discussed this with his foreman, who subsequently called the main contractor. On that rooftop, the logic was talked through and various solutions hypothesised and the result... raise a formal Request For Information (RFI) detailing the options discussed, highlighting the favoured approach for the architectural engineer to review and sign off.

This prompted two major questions for the managers I was working with:

- 1. What is it about how we design buildings today that prevents it from being designed to solve the problem and is constructible on-site?**
- 2. What stopped the decision being taken there and then on-site?**

Obviously, if you solve the first problem then you will see the need for the second reduce.

The managers were aware of the issues being raised by the workers and embarrassingly for the senior leaders, there was no action being taken to understand the type and frequency of the issues. This is in spite of the focus on margin.

Once first-hand knowledge of the system has been acquired, the next step is to pull data from the system. What could we learn about the type and frequency of the issues? Where are the problems coming from? After synthesising the data and putting it into capability charts the predictability of the issues and their predictable consequences can be established.

In construction, it is typical to see quite a large range in the data. It is rare to see perfect work being carried out perfectly. It is typical for workers to turn up at the appointed time and place only to discover they cannot perform their tasks. Whether it's because of design issues or what's already been installed in the space the end result is the same, the solution won't work.

Without knowing it, the system was doing the wrong thing righter, attempting to reduce the end-to-end time of work that should not have been needed. RFI's are a measure of failure demand in the system and if they were to be plotted in time series capability charts, which they never are, would demonstrate that nothing has changed or improved.

During their study leaders always identify a number of key types of issues that plague their developments. However, it is likely that these will also be found on every project all of the time as they are systemic and are 'designed in'. While it would be difficult to address them in current projects, ones not yet underway presented a great opportunity to act on and learn.

On new projects the proposition was simple, a different set of operating principles, e.g. get those who do the work to understand what matters to the client, have the preceding trade determine the nominal value and do the same with the trade that follows. The customer's nominal value will then be

pulled through the system unifying disparate functions as it goes. Where support is required from non-core functions, their needs are subordinated to the core thus maximising the effectiveness of the system.

These new principles have the effect of enabling trades to self-organise which in turn delivers a better outcome the client and makes the whole system more productive, efficient and profitable. The workers benefitted too, the work was less stressful, sites were safer, their contribution was valued and they were liberated to do the right thing whilst all the time remaining legal and lawful.

One of the best examples of this change in thinking came in a project that was run using new principles, a team of plumbers, scaffolders and wall installers got together to discuss the approach, the nominal value, the running order and lastly where the most effective laydown areas would be, what needed to be put there and when it was required to be there.

The result was incredible, not only did the supplier have a map of the site, the laydown locations and inventory list for each point, but they were able to contribute by informing the site how wagon loaded in order to facilitate forklift offloading in the exact order materials were required.

All of the communication happened with those who were doing the work, from the installers at the site, to the fabrication shop distributor, to the delivery driver and to the forklift driver at the site. Everyone knew, understood and contributed to a seamless flow of material and work.

Most importantly the approach ensured that items arrived at the right time, in the correct quantities, to the right locations and at the required quality.

Attitude to customers and suppliers – What Matters, Co-operation and Mutuality

Whilst the constant loops of RE's are easily identified, the true causes are hidden from the management view, most commonly by the contracts that underpin the system. Customers and suppliers alike are treated contractually in an attempt to limit the risk exposure.

In my experience, and characteristically of the construction sector, leaders only become aware of the problems a dependency on contracts when they see the impact on site. Their interaction with people doing the work, talking to clients and suppliers provides concrete examples of the once hidden issues.

When you help make visible what was once invisible leaders start to link the way they have designed and managed the work to how costs have been driven up and how service, morale and efficiency have been driven down.

The examples above highlight how the contractual nature of the system results in people 'covering their back'. This results in projects taking longer to complete than had been estimated, the "7 Re's" becoming institutionalised through the use of IT systems like BIM 360 and adherence to contract clauses in Service Level Agreements (SLA's) make service to clients worse.

Instead, the system should be designing out the highly predictable issues, especially when working with people that are spoken of being "*Friends ...*"

Why the system behaves this way, it is the result of the way in which the leaders in the system think.

When developing the customer's idea into something constructible, the system fails to help the customer think in life cycle terms (*Built for Purpose, Built for Maintenance*). It lacks measures that inform them how well the current methods have worked. The current approach is to interact with proxy owners and personas of those that will use the spaces and as a result, sees vast amounts of

rework and retrofits once signed off. A better method would be to visit those who will actually use the space to understand the following -

1. What works well?

- This will help ensure that the system keeps those things designed into the new area/building.

2. What doesn't work well?

- This helps the system understand what doesn't work and why it doesn't work from a users point of view in order to design out the issues and create opportunities to create more value for the client.

3. What would you do differently?

- Again, this helps ensure that areas that haven't been mentioned or covered earlier can be fully understood.

For all the above the follow-up question should be... "and how do you know?". As Deming said, "In God we trust, all others bring data!".

A big issue I observed was that even when the people that work in the sector listen to clients, they interpret what they hear from their current perspective. Paradoxically this mismatch often compounds the issues being discussed and, rather than creating clarity, creates more problems than it solves.

During my time in construction I have helped leaders firstly understand the approach being taken to customers and suppliers is contractual, helped them articulate how this is unhelpful and then give up their current approach in favour of adopting a "what matters" and mutuality/cooperative working relationship.

We have helped managers deliver projects where this kind of thinking eliminated 100% of RFI's, did not have to use any contingency funds thus increasing profitability and all this was achieved in shortened timescales. Not only this but the companies we have worked with have had testimonies from customers, suppliers and workers expressing how great it was to work in the new system.

Those working on sites using the Vanguard Method have a relentless focus on the causes of cost and systematically take direct action to remove them. The new operating principles provide guidance in the right actions to take during construction and once the project has been handed over help the client enjoy the things that matter to them.

Role of Management - to act on the system

The prevailing management thinking in construction is that if we manage the people the numbers will follow. W Edwards Deming taught us through his books "*Out of the Crisis*" and "*The new economics*" but vocalised in Peter Scholtes's book "*The leader's handbook: making things happen, getting things done*" that if you want to improve performance then you must shift your attention away from people on to the system.

"The fact is that the system that people work in and the interaction with people may account for 90 or 95 per cent of performance."^[3]

In construction systems leaders normally pay attention to the 5%, the people. When the very things that the 5% need to help them deliver perfectly are accounted for by 95%, everything that a worker needs to do a good job. A constructible design, being done at the right time so as to avoid "7 deadly Re's", with the right tools, equipment and material by the correct skillset to perfectly deliver against the nominal value of either the next trade (if not a finishing trade) or the customer.

With this in mind and fresh from visiting sites I would typically stop the leaders and have them take stock of whether it was the system or the person doing the work that accounted for the performance they had observed. The exercise we carried out simply asked: "What did Dave require to enable him to do a good job?".

After the production of a lengthy list, I have the leaders write S (System) or I (Individual) next to all of the items. Although the number wasn't quite 95%, 93 point something, the realisation began to dawn on them.

Armed with the list, the visits to the site begin to take a different shape. The leaders validated their lists with the workers, collected the frequency of the issues they had identified and explored the impact of the problems on the work.

Leaders become aware that the role of management was an enabling role and not checking role they had previously been performing. Checking who was here, checking that people were in the correct places, checking the right safety paperwork was being completed and ensuring their financials were 'tinkered' to display what other leaders wanted. And when they weren't checking they were firefighting!

What the system needed was a role who's time was spent thinking in terms of Quality of Service, both today and tomorrow. The Quality of Service today role was to equip front line workers to deal with all the tasks planned for 'today'. Quality of Service tomorrow was to be a step ahead of this, ensuring that when people arrive at work 'tomorrow' everything is properly planned, scheduled and prepared such that capacity and capability are perfectly synchronised with the work and delivery of materials.

One of the big issues for front line tradespeople was the stores. In one organisation the stores were designed and measured as a profit centre and not as a support function. Once leaders understand this distinction their job is to redesign stores using new principles that allow materials to be 'pulled' cleanly through the delivery process. The mantra becomes – *Right tools, material and equipment, in the right place at the right time*. Availability replaces profit as the measure of stores purpose.

The curiosity that has been created typically produces activity and it's important that any actions are performed from a common and shared understanding of how and why the works as it does today. This shared knowledge allows for an informed choice about how to change it. However, the current system will often fight off any attempt to change it meaning leaders must, as Deming put it, have 'Constancy of Purpose', i.e. there must be a unification of perspective and consistency in the application of new operating principles.

One example of a leader taking action involved working with a team of people across organisational silos. The team first established their current performance and what led it to be that way. They understood what had to be given up and what had to be replaced. They experimented with a new method based on new operating principles and measured how well that achieved the purpose, *Right tools, material and equipment, in the right place at the right time*.

Encouraged by the improvement archived through the application of new principles the team decided on a fundamental redesign of the supply process. The redesign removed the need for sites to raise orders for frequently used items like screws and nails as these delivered to site on a just in time basis using historic materials usage data.

This redesigned predictive supply chain was based on knowledge about job types and the purpose of the construction. This new knowledge increased the ability of stores to deliver perfectly which helped the project maximise the effectiveness of front line workers people, reduce downtime, prevent losses of material and equipment, reduced maintenance costs, reduced inventory stocked, to name but a few.

Ethos – Change – Motivation - Learning – Adaptive, Integral and Emergent – Intrinsic

The example above from the supply chain shows how control is not gained by paying attention to the wrong number and focusing on those who do the work. It is achieved by working together, studying and placing the locus of control in the hands of the people who do the work with measures that help guide them in experimentation.

All too often in construction companies decisions are taken far away from where the work happens and without any knowledge of what matters to the client about the problem they want to solve. It is being carried out by well-intentioned people, but ultimately the wrong people.

Throughout this article, you will have seen the very reactive nature of the current construction system that spends vast amounts of time and effort in producing plans to achieve outcomes. At no point is there a challenge to the efficacy of this method, nor is there anyone stopping to ask -

- 1. What is the problem to be solved?**
- 2. By what method?**
- 3. How will we know?**

It's normal for leaders to see the passion of their people striving to do great things in a system that has ended up, despite the best intentions, hampering them from doing a good job. The money motivator doesn't work, people want to be paid fairly for the good work they do and when given the freedom, will create value for the system and the client as seen on the site operating by the new principles.

New roles are required to create the environment that allows those doing the work to feel valued for plying their trade and creating a new lease of life in the system that generates a culture that delivers real systemic change.

Conclusion

For all of the shortcomings of the existing system, there are good people wanting to forge a new way.

The construction world has been let down by bad teachings and no method but that can be changed, as Taiichi Ohno once said

“Everything you need to know already exists in your system, you just need to know how to look.”

There are leaders in the construction sector that have seen the utility in the Vanguard Method and seen first-hand the benefits of a different way of thinking.

Getting real results requires real effort. You will have to challenge your current assumptions and how you thought you should act. If you persist in applying the Vanguard Method the results will astound you. This new way of thinking will help you cross the Rubicon and once on the other side you will never turn back!

[1] Vanguard. (2020). *Who's who of systems thinkers – Taiichi Ohno - Vanguard*. [online] Available at: <https://vanguard-method.net/library/whos-who-system-thinkers/taiichi-ohno/> [Accessed 21 Feb. 2020].

[2] Vanguard. (2020). *The customer sets the nominal value - Vanguard*. [online] Available at: <https://vanguard-method.net/library/videos-general/the-customer-sets-the-nominal-value/> [Accessed 21 Feb. 2020].

[3] Scholtes, P. (1998). *The leader's handbook*. New York: McGraw-Hill, p.296.