



Foxhole or phalanx: follow or lead the way

By Ken Bishop

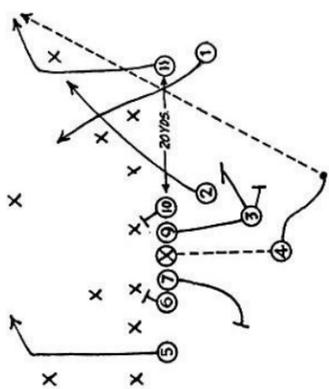


*You don't have to play,
You can follow or lead the way,
I want you to join together with the band,
We don't know where we're going,
But the season's right for knowing,
I want you to join together with the band.*

Lyrics, Join Together - The Who

Introduction

Circumstances can easily get out of control during construction for architects. I am reminded by reliable sources that this is no big news, as it has always been that way. The work is by nature reactive and often unpredictable as we do not control its quality, timeliness or efficiency of delivery. We are dependent upon construction professionals for these things. Nonetheless, it seems especially true these days that projects go awry in construction too often and with greater intensity and negative consequences than ever before. Architects are now devoting as much as thirty percent or more of their base project fees to this phase of work and still lose significant money. We find ourselves increasingly under fire and underprepared to respond to rapidly increasing work back logs that can retreat us into a foxhole mentality. Owners and contractors are unconfident in our ability to perform during construction. These positions of weakness open the door to a host of direct and indirect negative outcomes for us, our projects and our firms. Apparently, the marketplace concurs as the outcry for significant change to the status quo paradigm is increasing. Just pick up any industry survey or trade magazine for the requisite evidence.



This is the first in a series of articles, which span a range of topics related to our involvement in the construction environment today from the ground level perspective. The series is about connecting problems and solutions, foxhole and phalanx, as well as choices we have about our position within the construction environment. The notion of foxhole or phalanx starts and ends with individual choice. The mindset that we all choose as our professional approach within any situation influences our team (and firm) dynamic. How do we best operate in current and future construction environments? How can we maintain or regain control of our own destiny in the work and break cycles of seemingly intractable circumstances in which we find and create for ourselves? What are the changes transpiring in the industry that will influence our work? Cautionary tales and proactive solutions are useful, indeed necessary, for learning and improvement at all levels: individual, team, leadership and as a profession. There is much we can do to positively change our position if we are willing to recognize, act and make the right choices.

Future pieces will broach fascinating topics with a modicum of wit (at least attempted) and maybe some irreverence in an effort to keep us all awake. After all, the subject matter is not our favorite as architects. Hopefully, along the way, something of value will be transacted as well that will help each of us individually and collectively to get on the good foot with respect to the technical and construction side of our work. In this first round, we concern ourselves with setting some context by trying to understand what drives the construction environment in which we operate today.

Industry Drivers

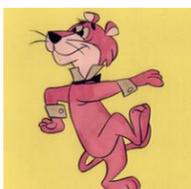
What do our clients want today? They, like other consumers in other market sectors, seek certainty above all else; certainty of cost, schedule and content. They want to know how much their projects will cost so that they can raise the proper capital and fix their budget. They want to know when they will be able to use their building so that they can minimize down time, follow business plans and execute move-in transitions with minimum disruption of business. They want to know exactly what they are going to get in terms of program and quality so they can successfully use and maintain their buildings. Simultaneously, the contracting industry's Holy Grail is also a relentless quest for certainty. However, in this context certainty comes in the form of assured profitability. They, like almost any other business, want to earn profit. Four powerful elements can be identified at work in the certainty struggle today: mutable cost contracting; schedule pressure; risk management; and the fundamental stalemate. They form the core industry drivers that propel the building process. Like it or not our work and our profession is profoundly affected by these forces.



In reality, the current paradigm at work in construction today is decidedly different and deceptively simple. Contractors competitively bid not for a fixed price contract, but for the *exclusive right* to increase the initial cost of their agreement later, during construction. Post-contract award, all competitive pricing for changes, additions and scope gaps to the work ceases. This bedrock principle termed **mutable-cost contracting** (1) has prevailed in the construction industry as standard operating procedure for a long time.



Perhaps, the single most prevailing compeller motivating owners for years, has been to get their projects built and open for business at the earliest possible date. Whether it is a hospital, retail business, office building, school, airport or home the financial consequences of delayed project completion are enormous. Accelerated schedules employing some form of a fast track delivery method now seem to be the rule, not the exception. The advent of fast track was intended to specifically cope with schedule pressure and provide greater certainty for owners. Adjacent to the schedule issue, labor cost passed materials as the chief driver of construction cost in the mid-20th century. However, today labor and material escalation are both of equal priority for the industry. Expensive skilled labor *and* scarce resources (i.e. expensive materials) are both forces to be reckoned with now. This exacerbates the **schedule pressure** problem as well. They are obviously linked.



Construction has become a litigative ecosystem for all inhabitants, creating a **risk adverse environment**. This in turn sponsors retreat from responsibility, reduced collaboration and contractual protectionism. Effective intermediaries for project advancement become scarce as focus centers on managing risk, and strategies become defensive, backward-leaning. Contractors routinely push risk away to subcontractors and back to design teams and owners. They are often preoccupied with managing risk more than managing the building process. To be fair, *all* parties have become hyper-risk adverse and behave accordingly. We are no exception.



There is a **fundamental stalemate** at work in the industry today from which much, if not most, inconvenient outcomes flow. All project constituents, owner, designer and constructor are participants and contributors. It is a now longstanding stalemate of divergent convictions, fortress-like entrenchments that allow little room for compromise. At its most rudimentary form the cause is threefold. According to the AGC, the constructor is entitled to *complete contract documents without qualification* and without participation of the contractor in their creation. The architect (and associated design professionals) are simultaneously required to provide contract

documents, that conform to the legally supported standard of care (unless modified by specific contract terms), that actually *contemplates incomplete contract documents* to the same extent its peers would provide under similar circumstances as an acceptable practice. Lastly, the owner contends that it is entitled to purchase a *complete product*, including a warranty, for a set cost within a defined schedule much like buying a toaster or a car.



Actor Joseph Jefferson as Rip van Winkle, Napoleon Sarony, 1869

We perform our work as design professionals against this backdrop. As individual professionals, project teams, companies and as a profession we decide how we want to proceed within this environment, for the moment anyway. We choose between foxhole and phalanx. On a pragmatic level a duality exists between the two polemic mindsets. They are both present as potential modus operandi with every choice we make in the construction environment. Our stance vacillates between forward or backward leaning depending upon the circumstance at hand. The question is, which position do we (or should we) tend toward and what are the costs and benefits of that chosen position? For whatever reason, if we elect no decision, call it a Rip Van Winkle approach, then that too becomes a choice of omission because it will be made for us by the marketplace. And let us be honest with ourselves about the positions we stake out lest we fool ourselves. The choice of foxhole *disguised* as phalanx could also land us in a world of hurt in the market changes that are on the way.

A look in the mirror

Lastly, instead of looking outward for industry reform perhaps it is more important to look inward to find viable solutions. Throwing the baby out with the bathwater is tempting but seldom proves to be intelligent. The way buildings are built now is problematic to be sure, but the problems did not arrive overnight. They have accreted over hundreds of years of slow evolution. As such, they have the advantage of being a very powerful long suffering adversary and will not go quietly into the night at the simple behest of theoretical fist pounding, glad-handing or other tomfoolery. Indeed the system has resisted radical reform for longer than all of us have been alive.



An honest and self critical look at the industry reveals complexities that may not produce immediate gratification. Perhaps solutions already exist in the industry, if anyone would seriously stop and look hard. Process waste may be best understood by those who deal with it daily. Consider that Henry Ford and Toyota both wisely consulted with folks closely involved with the production in their deliberations about change and innovation. Who better to know how to increase efficiency and reduce waste than those engaged at the coalface every day? It is an old argument, but it remains a credible one.

If many industry problems come from market forces outside of the industry and are harder to control like laws of supply and demand, then which ones come from within and may be easier to harness? Perhaps the ugly truth is that many significant problems plaguing the industry come from the top down rather than the bottom up. Maybe collaboration already exists but is hamstrung by management decisions made distant from the front line of collaboration. Are there ways of exploiting the collaboration mechanisms already at work but blunted by the effects of schedule pressure, the fundamental stalemate, mutable cost contracting, contractualism, and interference by the uninitiated, opportunists, marketeers and other benchwarmers?

One of the tragic results of the postmodern mindset is not only the loss of faith and of respect that we once had for the concept, the idea, the principle of truth, but the consequent tolerance we have developed for what Harry Frankfurt (and others) calls "bullshit." Bullshit, whether postmodernists intended it to be so or not, is the lingua Franca of the postmodern world. The postmodern world is not a world of lies, any more than it is a world of truth. It is a world seeking absolute liberation from absolutes, seeking certainty in randomness. It is a world where everyone and everything craves affirmation of the self, where all have come to expect that affirmation as a right, and where the "authority of truth" is a threat rather than a consolation. It is a world where no single idea, no single behavior, no single point of view, is inherently "better" than any other one. What matters about any given idea, or belief, or point of view is simply its utility, not its truthfulness: what, the postmodernist asks, can this point of view do for (or to) me? How am I affirmed (or threatened) by this idea? How am I privileged or exploited? Never do you hear the postmodernist ask the question: Is this idea true or is it false? This postmodern world, at the end of the day, is a world of bullshit, and it fits nicely with Frankfurt's descriptions of both bullshit and of the bullshitter:

It is impossible for someone to lie unless he thinks he knows the truth. Producing bullshit requires no such conviction. A person who lies is thereby responding to the truth, and he is to that extent respectful of it. When an honest man speaks, he says only what he believes to be true; and, for the liar, it is correspondingly indispensable that he considers his statements to be false. For the bullshitter, however, all bets are off: he is neither on the side of the true nor on the side of the false. His eye is not on the facts at all, as the eyes of the honest man and of the liar are, except insofar as they may be pertinent to his purpose in getting away with what he says. He does not care whether the things he says describe reality correctly. He just picks them out, or makes them up, to suit his purpose.

Peter Fallon (2)



The Great Handshake, Stephan Alcorn, 1992

Perhaps it is imperative that the sanctity of truth be emphasized once again over 'bullshit'? For example, what is the real nature of building and construction administration? How have projects been delivered successfully or unsuccessfully over time and what were the real reasons for the outcomes? The politically correct publications expounding on the benefits of various project delivery methods for producing a successful project do not tell the real story. Skill, commitment, knowledge, trust, collaboration and luck are a few of the truths (3). Is there a false expectation of solutions to process waste by looking exclusively outward to theoretical sources. We need to examine the problem from a ground level perspective by people with ground level experience.

Ken Bishop is an architect specializing in construction administration for over 25 years. He has worked in Boston and the San Francisco on a wide variety of project types. Mr. Bishop currently works in the bay area where he is involved in large, complex health-care projects within California. He is a graduate of California Polytechnic State University, San Luis Obispo and attended graduate school at Cornell University. In addition to mentoring young architects with whom he works, he has written on the subject of construction administration. He plays golf regularly, but poorly.

Endnotes:

1. *Broken Buildings, Busted Budgets: how to fix America's trillion dollar construction industry*, Barry LePatner, 2007, The University of Chicago Press, page 27
2. Excerpts from a book to be published this summer (2009) by the University of Scranton Press. *The Contentious Nature of Objective Reality and the Inarguable Value of Truth*, http://www.goodreads.com/story/show/5771.The_Metaphysics_of_Media
3. The contribution of this important reality by colleague and fellow curmudgeon Paul Cruz.



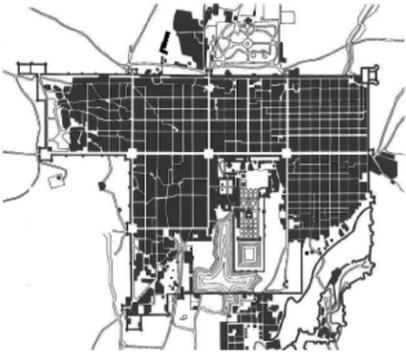
The trust machine: linking trust with process success

By Ken Bishop

*A fool often fails because what he thinks is difficult is easy.
A wise man thinks what is easy is difficult.*

John Churton Collins

There are those who maintain that the single most important factor for process success in construction administration is the level of trust existing between project constituents. Everything else that happens in foxhole society (1), both good and bad, springs from this simple axiom. Every syllable of Lean Construction or Integrated Project Delivery (IPD) jargon is premised upon this time honored tradition of trust. From a process standpoint, the truly exceptional building projects result from robust trust based relationships. It is no more complicated than that.



The really cool thing is that everyone knows what trust is; trust is a simple notion in theory. However, its application within a construction setting is an intricate issue as there are many factors that influence trust. Not everyone has the *experience* to know how to belong to and exploit a trust machine, the engine that drives project momentum. The uninitiated (and under-initiated) seldom know how to build and manage trust. Not everyone appreciates how volatile trust can be, what constraints are involved, and how its loss can undermine a project. Attempts to measure trust are generally futile because it is nuanced, defying reliable metrics. Reputation (individual or company) for trustworthiness seems to be the closest we can come to a yardstick for trust. This cannot be captured in a log or chart. Let's explore some of these ideas.

Consider this most basic of construction administration examples as we proceed. As design professionals, we depend upon the contracting team to provide us with timely and qualitative work product in the form of submittals and questions (RFI's) in order for us to perform our project duties. At the same time the contracting team relies upon us to provide timely and qualitative response to these work products to enable them to get the project built. The relationship is symbiotic. However, this symbiosis refers to the close relationship between two parties which can have differing results: mutualism (win-win), parasitism (win-lose), or commensalism (win-no harm). Trust plays a huge part in these assorted possible outcomes.

Trust Mechanics

How is trust built and managed? There are at least five components to building and managing trust according to one study (2). Trust is constantly tested in the crucible of construction, especially when problems arise. Construction has a component of unpredictability. New or unforeseen information appears, and changes occur frequently. Trust is determined by how people respond when things are *not* going well as much as when they *are* going well.



First, communal *problem solving* builds trust. Accumulated *experience* of repeated fulfillment (reliability) through action and outcome, in good times and bad, creates trust. A profound acuity to get that everyone is *commonly yoked* in the struggle against schedule pressure promotes the understanding that one's job is not performed in isolation. There is empathy within the project ranks that allows them to appreciate the requirements and difficulties others experience. The interdependent team (3) concept allows us to feel each other's pain as well as understanding those moments when people become unequally yoked. *Reciprocity* or quid pro quo is a longstanding and vital currency well understood in the construction game. It is important to the trust machine that favors are returned when supporting and rewarding each other's reliable behavior. Putting oneself out or making sacrifices to make other's lives easier in difficult moments enhances trust. Lastly, *reasonable behavior* that demonstrates pulling one's weight is another way of managing trust. Reasonable behavior is not necessarily about being non-confrontational, but it is about understanding what the people that you work with accept as reasonable. In other words, 'reasonable' is not limited to conventional modes; it is a situational term whose acceptance is directly linked to outcomes. Unorthodox behavior that produces mutually beneficial results is very likely to be accepted for example. Conversely, conventional behavior that inhibits trust often will not be well received.

Trust is a bi-product of people working together and is perhaps the most important variable in the equation for success. Why? Future success as an individual or a company on a project depends on the assured reliability of the work of others. Trust directly influences reliability in the information exchange process. High reliability in work transactions produces beneficial forward momentum in the building process (4). Reliability in the work handoff is the foundational principle for Lean Constructionist salesmen. However, good behavior based upon trust cannot be codified or institutionalized in a manual, cookbook or manifesto. And lest you get the impression that trust is sentimental or ambiguous in the construction environment, be advised there is a very sharp edge to the trust machine. It is as real as cold hard cash. Anyone worth a tinker's damn needs and wants it so they can get their job done.

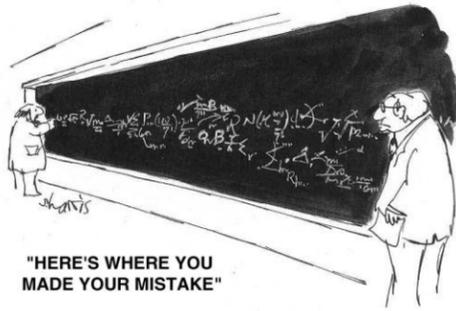
Most individuals start from a *baseline level of trust*, where they are prepared to put their faith in someone. Tapping this innate willingness to trust is a huge benefit, and is the easy part. Even if you have no experience working with someone, there is a trust, but it is a faith based trust, faith being the belief in things unseen. This initial trust is a gift, a benefit of the doubt, borne out of both human nature as well as necessity. This type of trust is freely given (mostly), it is not earned. Thereafter, trust is a commodity that is almost exclusively earned; it is bought and paid for with successful work transactions. When people trust, they are relying on the information that they are being given. They have to trust that the people they work with will deliver work product when they say they will and to an expected standard of quality. To sustain trust, requires continued proof of trustworthiness through performance. This is *demonstrated trust*. The trust meter moves up or down in accordance with deeds (not words). This movement is continuous according to the accumulation of work transactions.



Not everyone on a project can be trusted however. For these folks there is continually demonstrated a lack of trustworthiness through unreliable work and work transactions. To put a finer point on it, one's trustworthiness is directly proportional to the quantity and magnitude of their positive or negative work transactions delivered in a timely or untimely fashion. That means both trust and mistrust can be banked. Banked trust can be used as a hedge against periodic failures or negative work iterations. Trust makes possible exceptions to established rules of process protocol without penalty. Conversely, an accumulation of negative work iterations can be used as an affirmation of mistrust. Trust can also be commandeered or hijacked for ulterior purposes, but not for very long. The posers are quickly sorted out from the trustworthy through their actions. Deeds, not words, fuel the trust machine because the proof of the pudding is in the eating, rather than in a discussion of the pudding's pallet pleasing potential.

Volatility of Trust

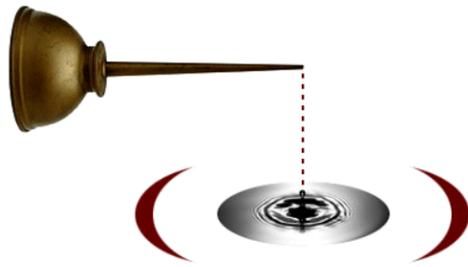
Trust is a volatile commodity requiring constant demonstration to survive and flourish. It can be built or destroyed. It is easily given but difficult to keep. Trust volatility is influenced by several factors including circumstances beyond our control, human fallibility, how mistakes are fixed and fair representation.



Reasonable people understand that outcomes are affected by external factors, things rarely happened in isolation and problems can often be an accumulation of things rather than any single individual's fault there are circumstances beyond our control. Most folks are ready to be sympathetic. In these cases, degradation of trust can be mitigated if there is a perceived willingness to make people aware of the problem timely, clearly, without deception or malice of forethought. The notion that we are all human and individuals just plain make mistakes is widely acknowledged. So too is there capacity to forgive, without trust degradation, especially where the trust bank is full. It matters less that you make a mistake rather than what you do about fixing the mistake. Admitting to the problem and fixing it ASAP are mitigators of trust degradation. Conversely, not expeditiously correcting the problem or even denying the mistake degrades trust. A negative work iteration compounded by not remediating it is detrimental to the trust machine. Lastly, every project constituent wants fair representation, free and equitable access to enable communication about issues without fear of their message being distorted or misused. Breakdowns of trust occur where people believe there is no access to forums of fair representation to communicate important issues fairly. Overly rigid or biased communication protocols are but one example of this problem.



Trust is constrained by the temporary nature of projects where strangers are thrown together. This makes it harder to generate and maintain trust. Greater project size and complexity make the challenge of maintaining a trust machine easier said than done. Also, constant recourse and retreat to contractual obligation can be an inhibitor of trust. People with experience know their responsibilities and obligations without the need to constantly refer to the contract. Reliance on contractual legislation of trust is a sure sign of a trust deficit. It is not hard to know when your project is a quart low on trust.



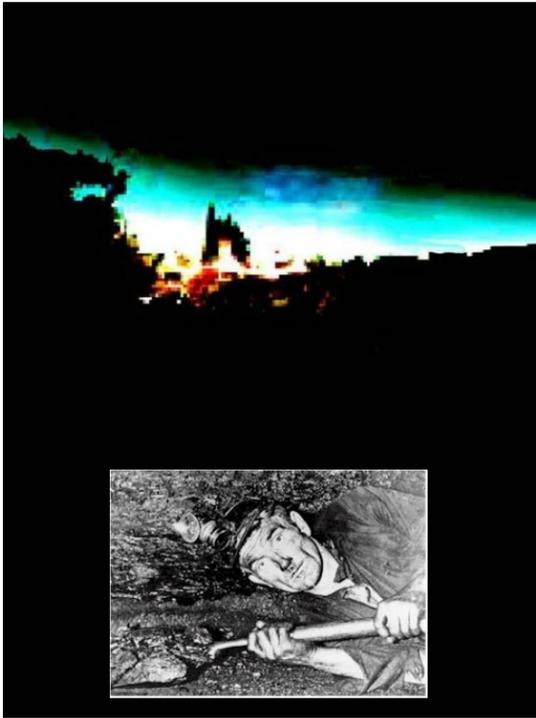
The benefit of trust is that it breeds flexibility and agility between project constituents enabling them to cope with the unknown and unpredictable in construction. An accumulation of positive work iterations, once banked, greases the wheels of success – all wheels, not just the squeaky ones. Efficiency is increased through trusted interactions. Uncertainty, therefore risk, is reduced. At times a powerful trust machine can actually begin to re-align allegiances along lines other than contractual obligation – it causes folks to *collaborate treasonably* in the short term for the sake of an immediate and mutually beneficial gain. They will put themselves or their company at risk, if there is enough banked trust. They will take more chances to help others. While project potentates would be aghast at this notion, the project at large usually benefits from such behavior. Developing a trust machine at the front line of collaboration, at the coalface (5), is the most valuable commodity that is sought by all involved. There is no substitute for a well-running trust machine.

Three important facets of our work in construction administration that are heavily underpinned by this idea of trust will be examined in subsequent Foxhole articles. What is the nature of trade and exchange at the front line of collaboration? What influence does our proximity to this front line have on our perception and behavior? How does the character of process rules of engagement affect work transactions?

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Endnotes:

1. Foxhole society in the construction context refers to that group of people, implementers, with distinctive professional cultures, who are harnessed together in a common project environment and whose work is constrained by schedule pressure. The notion of a foxhole society is a term attributable to Paul Cruz.
2. Swan, W., Cooper, R., McDermott, P., and Wood, G., (2002) *Trust in Construction: Achieving Cultural Change*. Centre for Construction Innovation, www.ccinw.com
3. See Foxhole article 2: The Interdependent Team: Foxhole Etiquette
4. Beneficial forward momentum is required in order to overcome public enemy number one, schedule pressure. The adversary in our process is neither the design nor building professional. The common foe of collaboration in the construction environment is *time* in the form of schedule pressure. This is the common foxhole from which we all battle.
5. A British idiom:
 - Someone who is at the coalface is doing the work involved in a job, not talking about it, planning it, or controlling it. *Cambridge International Dictionary of Idioms* © Cambridge University Press 1998
 - In UK business terminology being 'at the coal face' is used figuratively of any worker or manager who is in touch with the day to day processes of the business rather than having ceased to have involvement with the production.
 - It is a way of saying that the person is 'in touch' and appreciates the actualities of the business rather than being a 'bean-counter' (accountant) a 'paper pusher' (administrator) or a 'fat-cat' (overpaid manager).
 - Originally used with reference to miners i.e those who remove coal from the 'face' of the mine, it's now more commonly used to mean any work performed closest to the frontline. *Urban dictionary*



Life at the coalface: boundary-barrier, border-membrane

By Ken Bishop

Necessity, who is the mother of invention.

Plato

at the coalface

Someone who is at the coalface is doing the work involved in a job, not talking about it, planning it, or controlling it. A British figure of speech for any worker or manager who is in touch with the day to day processes of the business rather than having ceased to have involvement with the production. It is a way of saying that the person is 'in touch' and appreciates the actualities of the business. Originally used with reference to miners i.e. those who remove coal from the 'face' of the mine, it's now more commonly used to mean any work performed closest to the frontline

From last time, the case was made for *trust* as the basic form of currency in construction administration at the front line of collaboration within a barter style system of information exchange. But, what exactly is this place called the front line of collaboration? What is its nature? Why is it important? How do we participate in it and what is our function?



Charged with the task of conveying design intent within a set of contract documents, design professionals record intent that actually contemplates an allowable measure of legal imperfection and ambiguity. The precise and explicit nuts and bolts of how to achieve design intent is left to the builder. However, builders are charged to follow the contract documents and, in doing so, any defects or insufficiencies present in those documents do not become the responsibility of that builder. As a result, gaps and overlaps in responsibility between designers and constructors emerge, but let's not get ahead of ourselves. This dichotomy often creates a fundamental stalemate in the building process, because what exactly constitutes adequate design intent *and* its deficiency is blurry. These two conflicting realities are often played out in the debate over *design coordination* versus *construction coordination*. The difference between imperfect design documents and an expectation of complete design documents is resolved during construction at the front line of collaboration. It is the folks on the ground, the implementers, who are charged with the task of sorting it all out so that the project gets built without debilitating legal entanglements or unprofitability. This is the nature of our life at the coalface; at the edges of contracted obligation.

Contract Obligation and Process Improvisation

The temperament of contracts is largely single-minded; define responsibility and obligation. This resolute objective serves an obvious and essential function for everyone. However, it simultaneously places a burden on the process as well. **Contracts provide only a skeletal and abstract framework for process during construction. They do not anticipate the demands and realities placed upon process by schedule pressure.** Contracts do not recognize the accidental, the circumstantial, the expeditious, the conditional, or the contingent. Nor do they do not contemplate urgency, improvisation or nimbleness. They don't provide remedial solutions for imperfect situations in a fast changing project landscape. Contracts simply establish inert process boundaries with limited gates of communication between parties. Contract boundaries have limited porosity. Applied with impunity, contracts create a process straitjacket in the construction environment. They become the court of last resort for process deadlock.

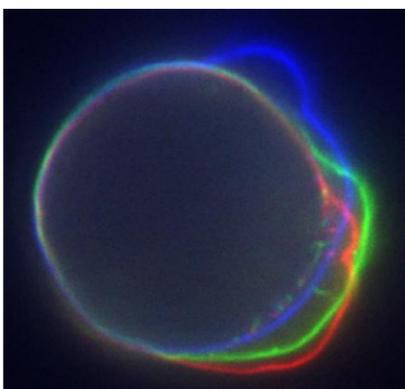


Nonetheless, many argue that contracts do provide inviolate boundaries for each project constituent, prescribing exact responsibilities in the performance of their work. One company's duty ends and another's begins at distinct moments within the process, there is no overlap of responsibility between contracted entities. **At bird's eye view, contractual boundaries appear as clear lines of demarcation; defining the limits of collaboration for people, a simple point of reference across which various factions are not permitted to cross.** There are distinct handoff points for discrete work transactions like submittals and RFI's. Woe unto those who do not observe these legislated barriers say the lawyers, risk managers, hall monitors and other benchwarmers.

At ground level, however, nothing could be further from the truth. Contractual boundaries are understood very differently at close proximity to the action; proximity to the frontline of collaboration. **On a healthy project, unconditional contractual distinctions do not exist for the implementer.** The line separating construction coordination from design coordination is not so crisp. Experienced implementers understand cross-contract collaboration as a matter of routine. They know that contractual obligation is more like a liminal (1) *border* than a static *boundary*. They know that contractual dogma will not get their work done in a constantly changing project environment. And thank the heavens for it, because projects that do not embrace this basic reality (for whatever reason) simply do not go well. Narrow-minded adherence to the boundary-barrier concept of contract doctrine promotes degrading project trajectories. In fact, most of today's justifiable industry criticisms about process waste stem from this very problem, collapse into contractual protectionism at the coalface.

Contract Boundary and Collaborative Border

We need to dig deeper in order to really understand the nature of boundary-barrier versus border. For help in this distinction let's employ a cell membrane analogy by Richard Sennett (2).



"All living things contain two sites of resistance. These are cell walls and cell membranes. Both resist external pressures to keep intact the internal elements of the cell, but they do so in different ways. The cell wall is more purely exclusionary; the membrane permits more fluid and solid exchange. The filter function of these two structures differs in degree, but for the sake of clarity let's exaggerate it: a membrane is a container both resistant and porous.

A homology between cell wall and cell membrane can be found in natural ecologies. An ecological boundary resembles the cell wall, an ecological border the cell membrane. A boundary can be guarded territory, like those established by prides of lions or packs of wolves, a "no-go" zone for others. Or the boundary can be simply an edge where things



end, like the tree line on a mountain that marks the boundary above which trees cannot grow. An ecological border, by contrast, is a site of exchange where organisms become more interactive. The shoreline of a lake is such a border at the edge of water and land organisms can find and feed off many other organisms....An ecological border, like a cell membrane, resists indiscriminant mixture; it contains differences but is porous. The border is an active edge.”

The resistant container boundary-barrier *separates* while the porous border-membrane *filters*. They are cousins, descendant from a common ancestor – the wall. The medieval castle wall had this same dual function, defense and the preservation of identity as well as commerce and the need for exchange (gates). According to Sennett, structural integrity and uniqueness of the organism is maintained by the cell wall as a boundary-barrier. It is a framework that keeps the cell intact with a unique identity. **The cell boundary-barrier’s purpose is to promote an inert division, an unconditional and clear separation or distinction where resistance to the outside is meant to be absolute.** Similarly, in the context of construction administration, contracts provide a framework for a company to maintain a cohesive whole and preserve its identity within a project, while allowing for tightly controlled interaction. Within any project environment, each company’s contract is also like a cell wall. It differentiates each company that contributes goods and services to the project, attempting to clarify responsibility and obligation for each unique identity. The job of plumbers is distinct from that of the engineers; builders are distinct from design professionals and so on. That is the theory anyway, at least from a distant viewpoint.

However, what appears from a distance to be an exclusionary wall with limited portals of communication, a contractual boundary-barrier between construction and design coordination, upon closer inspection, is really a “container” that is also porous. This nature of the cell border-membrane is *also* permeable in accordance with the needs of the organism. Some things, like food or waste, are allowed to pass through while other harmful elements are not. **The cell border-membrane’s purpose is to promote a relative division, a conditional and ambiguous separation or distinction, where resistance to the outside is meant to be circumstantial.** The membrane resists “indiscriminant mixture” by limiting the type transaction mechanisms. Contracts, in construction, similarly filter how work product is transacted through closely prescribed mechanisms like substitution requests, RFI’s and submittals. Contracts represent the most limited form of exchange across a porous border-membrane. While this border-membrane also resists indiscriminate mixing (chaos) and maintains distinctions (identity) it is also porous and permeable allowing people to become interactive. It is, in Sennett’s words, a site of exchange, an active edge. If the resistant part can be explained by strict adherence to dogmatic contractualism, then what more can be said about the porous part of this duality?



ELIJAH BY THE BROOK CHERITEL—1 Kings xvii. 4.

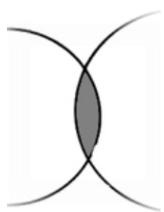
The need for greater information exchange on a project is driven by people operating under schedule pressure, not contractual obligation. With schedule pressure as the impetus, most project constituents want to move the ball forward, by any means necessary. **The need for information free-flow trumps the need for contract boundaries with their limited porosity. Necessity becomes the mother of invention for implementers.** It has been so for a very long time in the world of construction. People of good (and not so good) conscious will collaborate across barriers to solve problems when left to their own devices. They transform traditional barriers into borders out of necessity.

Subcontractors step across contractual lines to help other subcontractors daily. Designers do the same. Constructors and designers also engage in cross-contract collaboration routinely, often venturing into each other’s territory in order to solve some problem. **In the real world, the border-membrane is actually far more porous than contracts contemplate.** The relocation of an exterior service door going into an elevator penthouse from a roof due to a steel brace conflict (created by the design team) is most expeditiously accomplished by the trades (after the utility room’s services have been coordinated in the field) so as to ensure minimum adverse impact to that utility coordination. The constructors know where best to put the door and they are willing to do so even if it not their contractual obligation to do so. They step across contractual boundaries to do so because it makes sense in this circumstance.

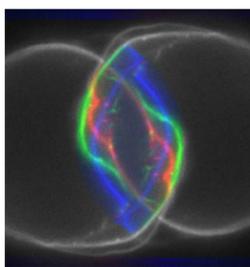
The desire to advance solutions to problems under schedule pressure is what subverts contractual barriers, especially when those theoretical barriers are perceived to have been created and imposed by others not present, and not in touch with the predicaments of the present tasks at hand. **In the realm of pragmatic urgency, porosity of the border-membrane will prevail over the contractual boundary-barrier almost every time.** When these kinds of cross-contract forays are not well understood (usually through inexperience) or when they breakdown or simply cease to occur, the project will tailspin - every time. Contractual barriers hold far less sway at the coalface.

In-between Borders – Free Collaboration Zones

To put a finer point on it, contractual border-membranes may not even be simple lines of demarcation at all. Rather, they might more aptly be understood as borders that temporarily shift to define unique areas or zones; zones of two types. One is a *gap* in responsibility between design and construction coordination discussed above and the other is an overlap or *intersection* of responsibility.



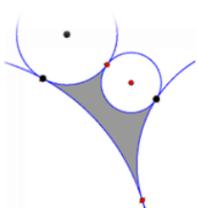
Responsibility Intersection



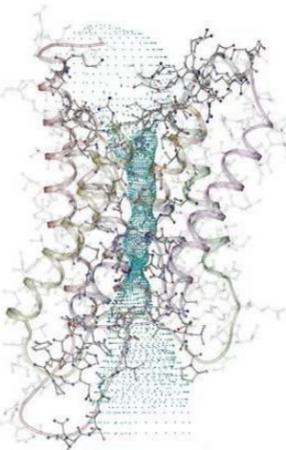
For example, when designers *offer* alternative technical solutions to issues which facilitate expediency to a means and methods problem of constructors we have decisively pushed our contractual border into the forbidden realm of builder means and methods. We have created an intersection, an overlap, of responsibility. Conversely, when designers *accept* an alternative technical solution *from* a builder which facilitates expediency due to constructability or bidding issue, then both parties might convincingly argue that they have each stepped outside of their contractual safe-havens to fill a gap between contractual boundaries.

One thing is certain, contractual perimeters are not as fixed as they appear from a distance. Perimeters become fuzzy, the farther from a contractual center you travel. **Their proximity defines temporary places or zones with x and y (and possibly other) dimensions where contractual and professional obligations overlie in some ambiguous state.** The nature of these zones is neither fixed nor permanent. They shift, adapt, morph and deform depending upon project circumstances. They are influenced by schedule pressure, trust (or the lack thereof), work backlog levels, expediency, negotiation, risk perception, relationships and other conditional factors. Their exact location and shape is therefore often elusive and their permeability thresholds vary, making them potentially strange and sometimes frustrating, especially to the inexperienced, or those who require absolute clarity and definition. They can be ragged and dirty places with nebulous lines containing apparent contradiction, where both rules and their exceptions may apply. Submitted for your approval, Rod Serling might narrate at this point.

The gap zone is less like a line in the sand and more like a space that lays in-between two or more controlled and secure contractual sectors of safe haven, a demilitarized zone, existing beyond the periphery of contractual limits. However, unlike a DMZ, it is *not* a no-man’s land or a no-go zone, devoid of interactive life. There is no apparent Checkpoint Charlie through which one passes that signifies entrance to, or exit from this DMZ. On the contrary, it is filled with activity, a nearly free trade zone of barter and exchange between project implementers where the real hard work gets done. It is a zone whose mantra is let’s make a deal, with trust as the primary currency and where differences are settled locally according to internally established rules of engagement. Sometimes treasonable collaboration to one’s own allegiances is even required to procure a greater good, like when certain submittals are expeditiously used to alter scopes of work through prior agreement of involved parties.

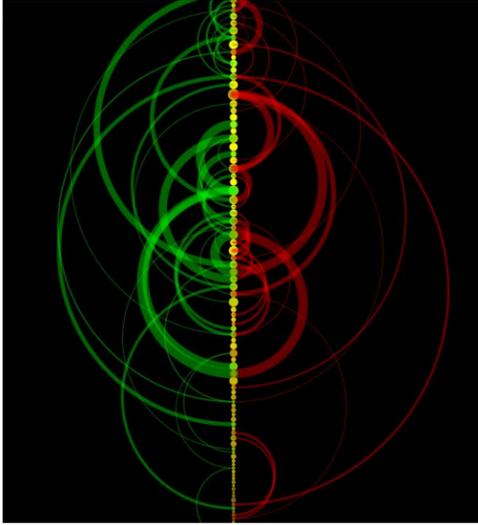


Responsibility Gap



So.... all of this means exactly what, to us?

The good news in all of this is that no one person or company controls the collaborative zone, there is no central scrutinizer pulling the strings. It is the location of information exchange between people who work at (and beyond) the periphery of contractually prescribed obligations. It is not a physical office, room, or site. It is an environment, like cyber space maybe, where we all do our thing, together; a collective consciousness. For design professionals, it is the place where we contribute by responding to contractor work product in the form of submittals, RFI's, ASI's, meetings, drawing changes and many other mechanisms. It is where we do the heavy lifting, technical work that gets projects built (3).



Next, withdrawal or disengagement from the zone produces stalemate, process stagnation and paralysis as well as degrading project trajectories. We are fully engaged in this place at front line of collaboration as partners with constructors, like it or not. Perhaps that is why trust is of such high value. It is the place where exchange happens with little interference by the risk manager and pundit, however there are profiteers and other pirates present as well. It is also not well understood by outsiders. It is for this reason that beads of sweat most certainly form on the foreheads of those whose proximity to the action is distant, like project potentates and other non-implementer types. They just don't get it.

As the contractor is pulled forward into design, untested new processes serve to further obscure responsibility. If we think the limits of design versus construction coordination are fuzzy in the present regime, just wait and see what unfolds in the new and untested project delivery theories now in vogue. How do people navigate the murky waters of construction under such transient and confusing circumstances?

The answer is neither complicated, nor new. Managing process ambiguity in construction administration requires excellent *situational judgment*, the ability to make decisions in a highly fluid and circumstantial environment, often without the benefit of complete information and always under schedule pressure. Skill with situational judgment relies on experience combined with a keen understanding of trust. Situational judgment, informed by experience determines the required amount of permeability at the front line of collaboration, which makes everyone involved, a gatekeeper. Converting boundaries into borders and barriers into membranes, without erasing them, is the reality at the front line of collaboration.

Perhaps it is this process ambiguity that explains why people experience the front line of collaboration in many ways, each with differing outcomes. Almost all finish construction administration duty with bruises resultant from close quarter high speed interactions. Many emerge professionally victorious, with a well developed acuity in situational judgment skills. Almost all learn what it means to truly collaborate and belong to a true team. Others are irrevocably damaged and suffer degrees of post traumatic stress disorder for construction administration, often forever. Still others behave like a bull in a china shop with varying degrees of success. Some become paralyzed as a deer in headlights – they are often carried out on a stretcher or find their own secret escape hatch through which to flee. Life in the dirty zone of collaboration is cathartic if it is nothing else. One thing is common to all; there are almost always tall tales to tell of the adventure. People are changed by the experience. What doesn't kill you makes you stronger.

Ken Bishop is an architect specializing in construction administration for over 25 years. He has worked in Boston and the San Francisco on a wide variety of project types. Mr. Bishop currently works in the bay area where he is involved in large, complex health-care projects within California. He is a graduate of California Polytechnic State University, San Luis Obispo and attended graduate school at Cornell University. In addition to mentoring young architects with whom he works, he has written on the subject of construction administration. He plays golf regularly, but poorly.

Endnotes:

1. Liminal - An adjective referring to an elusive but sensually rich threshold between two different places or states. From the Latin word *līmen*, meaning: a threshold.
2. *The Craftsman*, Richard Sennett, 2008, Yale University Press, page 227.
3. The closest analogy in Lean Construction speak is 'the big room' (this idea has been co-opted by the Lean-ers). Unlike this paradigm it does not depend upon physical proximity as its sole requirement for success. It is a place where implementers thrive and hall monitors are generally not welcome. The big room concept recalls a guild studio model (Sennett). However, advanced forms of communication make possible the virtual big room, where physical proximity of collaborators is not necessarily required. What is lost by loss of physical proximity?



The problem of collaboration: Knot theory, self interest & situational judgment

By Ken Bishop

*You got to know when to hold 'em, know when to fold 'em.
Know when to walk away, and know when to run.
You never count your money, when you're sittin' at the table.
There'll be time enough for countin', when the dealin's done.*

Lyrics from The Gambler, Don Schlitz



It is well known that a jostled string tends to become knotted; yet the factors governing the "spontaneous" formation of various knots are unclear. We performed experiments in which a string was tumbled inside a box and found that complex knots often form within seconds.

Dorian M. Raymer and Douglas E. Smith, *Spontaneous Knotting of an Agitated String*, 2007, <http://www.pnas.org/content/104/42/16432.abstract>

That is knot theory. Wherein examined is the tangling of strings induced by tumbling motion. Sounds like nice work, if you can get it (not). However, there is a useful analogy for us in the construction process. Strings are like all of those distinct forces at work in construction, they entangle in different ways for each project depending upon the specific circumstances of that project. Projects get knotted up and schedule pressure is the catalyst, the tumbler.

The snarl often seems impossible to understand, never mind unravel and manage – the classic Gordian knot maybe. However, just as Alexander the Great's solution to the Gordian knot was simple (the sword) so too is the answer to unraveling knots created by schedule pressure in our projects.



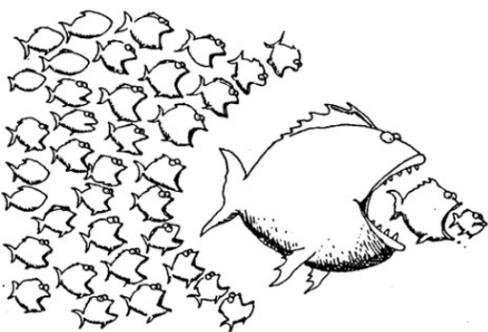
Collaboration unknots tangled project environments. That is why most folks want it. It navigates everyone through the binds created by process quagmires and competing interests - knots. Life is made easier. But collaboration is a craft. It requires hard work, practice and dexterity to master.

The construction environment is a complex organism of interrelated people and processes. Each project has a short life span, so it is temporary in nature; we don't have years to optimize our production line and hone relationships. The cast of characters is large and motivations vary. Generally speaking however, everyone wants a successful project because a successful project usually gets everyone what they need. Self interest is in play for every project constituent, individual and company alike. Let's explore some fundamentals of collaboration under the project entanglements caused by schedule pressure.

The mechanics of collaboration

The fact is most of these guys out here have no clue why they do what they do. From signing a transmittal to signing an agreement people just make shit up, pretending to know about the law and business, and trying to sound smart. But, they get uncomfortable because shedding sunlight on an issue requires a common goal. A common goal makes it much harder to bullshit your way into creating a perception of adding value. Of course the common goal for those enlightened few is to finish the building—share information and move forward.

Craig Malaer

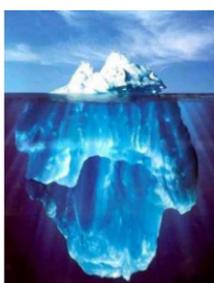


One current formula for collaboration invokes Henry Ford to unravel the knot of *how* to collaborate. It promotes the refocus of projects as production chains, like assembly lines. It seeks to mitigate variability in every aspect of the process and closely manage the remaining variability, reducing the design and construction process to the most efficient production *algorithm*. While another recent vogue collaboration system theorizes a path wherein designer originality is preserved by leading an effort of consensus driven collaboration early on in the design process that includes the builder. Technical and costing expertise of the builder is a tool exploited as an essential part of the collaboration in order to validate the consensus. It seeks to prosecute an early intense trial and error *heuristic* investigation, a method by which the best possible choice is made only after a list of promising choices is generated and tested. Process tension may be created between the two styles when design idea choices introduce variability into the production algorithm. Heuristic decision making quickly becomes at odds with the assembly line algorithm that intrinsically seeks to limit variability in favor of hyper-efficiency.

Can good behavior be legislated through contractual language? The short answer is no. If a contract could guarantee collaboration then why hasn't it been invented in all of the thousands of years people have been doing business? Why are we still searching for it in the design and construction industry today? Contracts are a deterrent to bad behavior more than they are a guarantor of good behavior. However, overreliance on written contracts to ensure that project constituents cooperate with each other daily is a fool's errand. Let's give it a name. Let's call it contractualism; the mistaken or misguided view that ordering collaboration from on high through contractual hegemony actually produces the intended results - real collaboration. Real collaboration is more communal and tribal than it is dictatorial, less of a science and more of a craft. Like all craft, it has to be cultivated through practice to become expert.



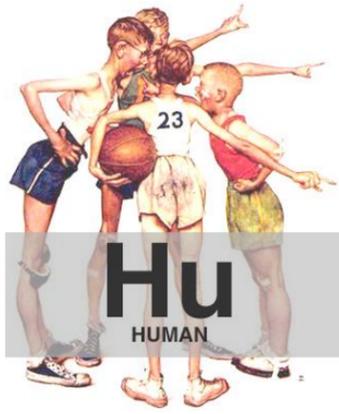
Why do we think collaboration is a top down mandate rather than a bottom up reality? People at the coalface volunteer to collaborate (or not) *regardless* of contractual obligation. They do it, or do it not, for either self interest or altruism, two mindsets that bracket many shades of gray in human behavior. If your job is made easier later by taking it in the shorts on the present construction problem, then self interest usually wins out. Accepting a nasty looking roof overflow drain pipe poking awkwardly out of a precast panel in some innocuous location on the building now, will buy you some extra consideration from the plumber for concealing the same problem in a very prominent location later. Otherwise put, helping me out of jamb right now buys you the promise of being helped out of a future jam. That is peer-to-peer social contracting in a nutshell – the give and take, the quid pro quo that builds reliability and trust between project constituents. It is earned through deeds. Make no mistake; over the long haul of a project's lifespan, trust is not given freely, it is *always* earned.



The real **mechanics of collaboration reside deep underneath contracts in the details of process**, where the devil is found. Process efficiency is captured (or lost) at this level. People acting as implementers, peer to peer, enable process reliability through social contracts among project constituents and they have been doing this successfully, for a very long time. Implementers regularly chafe when benchwarmers mandate collaboration and dictate its terms as if they knew firsthand what it means to collaborate under schedule pressure – really collaborate. Implementers prevail regardless of aforementioned attempts to legislate good behavior through contract language or avant-garde protocol formulas or business models. They keenly know the difference between theory and practice. They understand what it means to be integrated without a booklet explaining it to them. While collaboration *theory* is sweetly seductive, collaboration mechanics is raw and austere, requiring acuity and practice to successfully cultivate it as a craft.

Leadership and collaboration

Leadership and collaboration are linked. Leadership sponsors collaboration by creating a following. Anyone can be a leader because leadership is influence and influence is also earned. It cannot be awarded, mandated or assigned. In the practical world, leadership is more verb than noun. Demonstrated reliability by example produces influence. Build trust not by talking about it, but by achieving results, with integrity and in a manner that shows real regard for others. Build respect and credibility ahead of personal agendas, by making sound decisions, admitting mistakes, and putting what's best for followers and the work. Leaders create beneficial momentum that others follow. Like collaboration, it is also a craft.



Why can't collaboration be conscripted through contractualism? Because **implementers will follow leaders before they follow contracts** and other artificial constructs. Leadership trumps contractual hegemony in the collaboration game every time because human beings are moved by humanity, not by abstractions. Contractualism fails to recognize what one TV advertisement (ironically by Dow) calls the human element – Hu. We are emotional critters first, before anything else. Effective leaders know that you first have to reach the heart before you request collaboration. You can't move people to action unless you first move them with emotion. Where the heart goes, the head will follow. People don't follow worthy causes at first, they follow worthy leaders. If true, that means relationships are critical to real collaboration.

It becomes the leader's job to initiate and maintain connection with project constituents. The process of building relationships through connecting with individuals, establishing trust by *earning* respect and credibility is how actual commitment networks form and prevail. That is the inertia of peer-to-peer social contracting that a leader looks to tap. Early in the construction process when strangers are put together to build the project, the first thing people do is investigate which people are trust-worthy. A leader's goal is to shorten this investigation for as many project constituents as possible in order to establish a high degree of forward momentum as early as possible; as we are all trying to beat our common foe, schedule pressure.

Never underestimate the power of building relationships with people before asking them to follow you. The stronger the relationship and connection between individuals, the more likely the follower will want to help the leader. You develop credibility with people when you connect with them and show that you genuinely will help and be reliable. Predictable and reliable workflow through collaboration follows.

A leader has to quickly read the situation and know instinctively what play to call. Leaders see everything with a leadership bias, and as a result, they instinctively, know what needs to be done. This informed intuition causes leadership issues to jump out of a given problem set. The best way to describe this bias is an ability to get a handle on intangible factors, understand them, and work with them to accomplish forward momentum. The more leadership ability a person develops, the more quickly he recognizes leadership, or the lack of it, in others. Great leadership intuition is nothing more than the intelligent development and use of *situational judgment*.

The problem of collaboration

Do we owe each other moral consideration when performing our work or is it every man for himself? To deny either self interest or mutual interest; or to methodically deny one in favor of the other, is to ignore reality. The sharp edge of this perhaps self-evident observation lies in practical execution; the judgment of which one to choose, at which moment, and on which problem is what makes collaboration challenging. Neither self interest nor mutual interest is always bad, or always good for that matter. Sometimes they are simpatico, sometimes they are not. One person's agreement can be another person's disaster in the construction environment.



Perhaps the answer to how and when to collaborate cannot be usefully decided apart from context. It is *situational*, requiring superior *situational judgment* skills. The problem of collaboration is not well understood when separated from the actual act of collaboration. In other words, you have to be in it to really know it. The intimate realities of collaboration are known only through close proximity to the action, rather than by objectifying it as an abstract and distant notion, or theoretical study. You learn what it really means by actually doing it, rather than talking about doing it. Nowhere is this truer than in construction.

When the framer is fouled because ducts overhead have already been installed who is at fault? Who has/has not collaborated? When the ducts cannot be installed because the as-built framing did not provide an opening for the duct to pass, who has/has not collaborated? Does the first trade in get to build it the way they see fit while the subsequent trade is left to adapt, often through the change order process?

When multiple deficient RFI questions have been submitted and the next one is sent back to the author for rework who has/has not collaborated? When multiple deficient RFI responses have been submitted and the next one is abruptly returned for rework who has/has not collaborated? When an obvious and discoverable drawing error has been made and it is not discovered by the *builder* until the issue has become schedule critical (1), who has/has not collaborated? When an obvious and discoverable drawing error has been made and it is not discovered by the *designer* until the issue has become schedule critical (2), who has/has not collaborated? When an *accumulation* of discoverable drawing errors have been made and they are *chronically* not discovered until schedule criticality is breached, who has/has not collaborated?



The modes of collaboration are fundamentally threefold: face to face (the meeting), telephone or written (e-mail or the like). All are viable tools, each to be used appropriately. E-mail and other written forms is a method that allows for judicious use of time in a busy environment that demands multi-tasking in short bursts. Documentation of the proceedings is inherent. But written collaboration carries with it the temptation to easily pass the buck, hurling the problem over the fence to someone else unfairly or prematurely. It can be too interpretive, ambiguous or elusive especially to those of us less skilled in written communication. Telephone communication (including video) carries with it the ability to provide nuanced verbal collaboration over a distance with a human touch. However, phone conversations do not document significant decisions, the content of which often fades with memory. Meetings small or large are time intensive, especially when the parties are unprepared or remotely located. They can be very wasteful of expensive billable time, especially large groups. Documentation of the proceedings is still required to avoid unreliable and convenient memory problems. There is no perfect collaboration medium. Respect for people's time under schedule pressure constraints is a key to choosing the right combinations of collaboration mediums appropriate to the circumstances and context. Regardless of mode, performing your job in a way that makes the next person's task downstream from you easier remains the best rule for collaboration.



We rely heavily on a salience threshold (3) in our collaborations. Schedule pressure seldom allows us to make decisions by collecting all of the desired information with which to act. Often, we simply do not have the time required to create absolute certainty in the decision making process. Rather, we have to make a robust or best guess when enough value adding information is collected in order to act on a particular issue or problem. More simply, we need to achieve the minimum amount of *significant* information with which to act – a salience threshold. We must intuitively sense when the salience threshold is reached. This is a skill that requires experience, sensitivity and discrimination. Situational judgment is again our best tool. Courage is required to make decisions with incomplete information. A few markers in our pocket from fellow collaborators also help immensely.

The **problem of collaboration is one of self-interest weighed against self-sacrifice**. Sacrifice of some advantageous position, however small or large. We lower a ceiling height to facilitate above ceiling MEP coordination in one room in order to gain moral high ground in the fight for maintaining a soffit height in the main lobby.

But is this really self-sacrifice? Is it truly altruism, where an advantageous position is freely given up for no expectation of quid pro quo later, or maybe it is just a modest self sacrifice on the present issue in order to gain special consideration from others in some other future deal. Is this just simple pragmatic Darwinism at work? At decision points on every issue, sitting at your desk in the quiet of your own thoughts, will self interest or mutual interest prevail - decision of necessity or of convenience? In small ways and large, we face this test thousands of times on a project. It is the internal assessment that comes at the moment of truth. This problem of collaboration is hammered out every day on every project.



We need to understand that knots will form on a project driven by the unforgiving task master of schedule pressure. This requires us to make use of all of the collaboration tools at our disposal, establish appropriate salience thresholds in order to act and exploit influence that leadership provides to help us call the plays. In the collaboration game, a well honed talent for situational judgment is a craft that weighs the correct balance of self-interest to self-sacrifice, one issue at a time. This is **collaboration that unknots tangled project environments** and gets projects built. It is not new and it requires hard work to succeed.

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Endnotes:

1. Spearin Doctrine aside.
2. Standard of Care aside.
3. Saliency is the state or condition of being prominent or of notable significance; standing out conspicuously; most noticeable or important; prominent; projecting beyond a line, surface, or level. The saliency threshold is discussed in the decision making context by *Roger Martin and Hilary Austen* in *The Art of Integrative Thinking*.