MASIN

Quantifying Supply Chain Disruption and Logistics Delay: What the Protocols Don't Tell You

BY HIMANSHU BATRA

Quantifying Supply Chain Disruption and Logistics Delay: What the Protocols Don't Tell You

A shipment of structural steel sits in a port 6,000 miles away. The vessel has been rerouted because of passage congestion. Your programme says the erection should start next Monday. It will not. And from that single moment, the project begins to unravel, not in one clean, measurable way, but in a dozen overlapping, cascading, hard-to-pin-down ways that will take months to untangle and years to resolve in arbitration.

This is the reality of supply chain disruption in modern construction. COVID-19 shut down factories and ports across Asia. The Russia-Ukraine conflict triggered sanctions that cut off established supply routes overnight. Tensions between Iran, the United States, and Israel have disrupted the Strait of Hormuz and Red Sea shipping, rerouting vessels around the Cape of Good Hope and adding weeks to delivery schedules already under pressure. Everyone in the industry has lived through at least one of these events. What far fewer practitioners understand is how to quantify their impact in a way that actually holds up. This article is not intended to summarise the SCL Protocol or AACE 29R-03. Instead, it is about the practical gaps, the real-world lessons, and the things the protocols assume you already understand but rarely spell out.

Stop Treating Delay and Disruption as the Same Problem

The most common error in supply chain claims is conflating delay with disruption. Delay is a time problem, a stoppage or slower progress along the critical path. Disruption is an efficiency problem—additional resource hours per unit of work produced. The SCL Protocol defines disruption as "disturbance, hindrance or interruption to a Contractor's normal working methods, resulting in lower efficiency." Keating captures it with particular precision: disruption occurs where there is "disturbance of the contractor's regular and economic progress and/or delay to a non-critical activity even though, on occasion, there is no or only a small ultimate delay in completion." Separating employer-caused disruption from contractor-caused inefficiency is, as Keating emphasises, "crucial."

Why does this matter in a supply chain context? Because a late material delivery triggers both problems simultaneously, the cost difference is staggering. When European contractors lost access to Russian-sourced steel, the immediate delay was measurable—weeks waiting for alternatives from Turkey or India. But the disruption was far worse: substitute products required additional quality testing, fabrication drawings had to be revised for different section profiles, and erection sequences were replanned because deliveries arrived in a different order. Hamish Lal's research puts hard numbers to this phenomenon. In one mechanical pipework installation, recorded stoppages accounted for just 3.57% of total man-hours, a seemingly trivial figure. But actual productivity loss was 38.99%. The explanation lies in what Lal calls "contributory work" and the "human effect": interrupted operatives do not simply pause and resume at the same pace. They lose coordination, momentum slows, and each resumption requires re-familiarisation. You may have a four-week critical path delay generating modest prolongation costs, while the disruption generates ten times that amount in lost productivity. Present them as a single claim, and you will almost certainly undervalue the disruption component.

The Cascading Issue

Supply chain disruption differs from a late design instruction in that its effects cascade unpredictably. A four-week delay in façade materials may defer installation. Upon eventual delivery, other trades are already operating in the same area. The façade works proceed out of sequence, with restricted access and increased interface with concurrent activities—reduced productivity, additional supervision, and extended temporary works, giving rise to costs materially higher than the delay itself.

The courts have recognised this cascading principle. In Ellis-Don Ltd v Parking Authority of Toronto, a late excavation permit caused a seven-week delay that cascaded to 17.5 weeks through consequential events. Whilst that case concerned cascading delay rather than disruption, it illustrates the broader principle that foreseeable consequences may materially exceed the initial temporal effect. In supply chain cases, these knock-on effects often result in significant disruption, which is frequently the larger element of the claim. The SCL Protocol cautions that “the not uncommon practice of contractors making composite or global claims, without substantiating cause and effect, is discouraged by the Protocol and rarely accepted by the courts.” The analyst’s role is to trace the causal chain step by step and show that each consequence naturally and foreseeably flowed from the original supply chain failure.

Choosing Your Method - and Knowing Which Problem You Are Solving

A supply chain claim involves two distinct exercises: assessing delay to completion (a time question) and assessing disruption to productivity (a cost question). The methodologies differ, and confusion between them is a common source of error.

With regular programme updates and accurate progress data, a Time Slice or Windows Analysis is typically most defensible. With patchy records, an As-Planned versus As-Built analysis may suffice. Both protocols stress that they are guidance - the SCL Protocol reminds users to "apply its recommendations with common sense," and AACE 29R-03 acknowledges that forensic schedule analysis "is both a science and an art."

For measuring disruption, the Measured Mile is the gold standard. It compares productivity during unimpacted and impacted periods using actual project data. The SCL Protocol describes it as "the most appropriate way to establish disruption," noting that "such a comparison factors out issues concerning unrealistic programmes and inefficient working." Where no unimpacted period exists, Earned Value Analysis offers an alternative—but only if the tendered baseline is verified as reasonable. Consider a masonry crew planned at 180 square meters per day. Sanctions force a switch to an alternative block manufacturer with different modular sizes. Output drops to 85 square meters per day. The analyst identifies an earlier unimpacted period where the crew consistently achieved 155 square meters per day. Earned Value, measuring against the planned 180, calculates disruption at approximately $72,000. The Measured Mile, measuring against the actual achievable 155, calculates $59,000. The $13,000 gap is not a disruption - it is the contractor’s baseline underperformance. A tribunal will see through an inflated baseline immediately.

The Strategic Choice and the Acceleration Trap

When a supply chain event hits, the contractor faces an immediate decision: stand down unproductive resources and claim delay costs, or keep them working at reduced efficiency and claim disruption costs? The difference in financial outcome can be enormous. The critical mistake is accelerating a disrupted project before the effects have been neutralised - this only compounds the problem. Acceleration on top of disruption creates a tangled mess of overlapping causes.

Records: The Battle Is Won or Lost Before the Analyst Arrives

Keating puts it directly: "Adequate record keeping is the fundamental key to proving a disruption claim." And here lies disruption's unique trap: Keating observes that disruption "may not be immediately apparent that it is occurring. Thus, it may not be until financial reports are compiled by the contractor, sometime after the work has been disrupted, that loss of productivity, for example, becomes evident. By that stage, vital information may have been lost." This is precisely what happened during COVID-19 and the sanctions era - disruption crept in gradually, was absorbed by site teams trying to keep work going and was only recognised as a quantifiable loss months later. The projects that fared best tracked every shipping delay, documented every material substitution, recorded every labour redeployment, and updated their programmes to show contemporaneous impact. There is, however, a counterweight: Keating endorses the principle that "where it is shown that some substantial loss has occurred, the fact that an assessment of the loss is difficult because of its nature is not a justification for refusing to award damages." This does not excuse poor records - but it means a contractor whose records are imperfect but not non-existent should not be shut out entirely.

The Material Substitution Problem

One aspect the protocols barely address—but which the Russia-Ukraine conflict has thrust into the spotlight - is material substitution. When sanctions cut off a supply source, the alternative will almost never be like-for-like. Different manufacturing standards, section sizes, and certification requirements generate additional design review, testing, revised fabrication drawings, and potential rework. The Measured Mile is difficult to apply here because the substituted work is, by definition, not comparable. Earned Value may be more appropriate, but the analyst must adjust the baseline to reflect what the work would have cost with the planned materials. This is judgment territory, and it demands transparency.

Closing Thought

The best supply chain disruption claims - whether arising from a pandemic, a geopolitical conflict, or a sanctions regime - share three qualities: they distinguish clearly between delay and disruption, they trace the causal chain link by link, and they are honest about what they cannot prove. Tribunals reward transparency and punish overreach. In this field, credibility is the most valuable asset an expert possesses - and the easiest to lose.

References:

- *https://www.nytimes.com/2026/03/31/world/africa/africa-iran-shipping-houthis.html*
- *Society of Construction Law (UK), Delay and Disruption Protocol, 2nd Edition, 2017.*
- *AACE International, Recommended Practice No. 29R-03: Forensic Schedule Analysis, Rev. 25 April 2011.*
- *AACE International, Recommended Practice No. 25R-03: Estimating Lost Labour Productivity in Construction Claims, 2004.*
- *Keating, D. et al., Keating on Construction Contracts, 12th Edition*
- *Lal, H., Quantifying and Managing Disruption Claims*
- *Keane, P.J. and Caletka, A.F., Delay Analysis in Construction Contracts. 2nd Edition, 2015.*
- *Pickavance, K., Delay and Disruption in Construction Contracts, 1997.*
- *Bramble, B.B. and Callahan, M.T., Construction Delay Claims, 7th Edition, 2022.*
- *Bailey, J., Construction Law, Volumes I–III.*
- *Knowles, R., 200 Contractual Problems and Their Solutions, 3rd Edition, 2012*
- *Ellis-Don Ltd v The Parking Authority of Toronto (1978) 28 BLR 98 (Ontario SC)*