THE FUTURE OF FORENSIC SCHEDULE ANALYSIS

AACE

NAVIGANT

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    - B. Architecture 1975, Syracuse University
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    - Attorney – 3,
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  - AACE --- Board of Directors 2010/14
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The Future of Forensic Schedule Analysis

THE GOOD, THE BAD, THE UGLY, AND THE INEVITABLE

THE GOOD, THE UGLY, THE BAD, AND THE INEVITABLE

- **Four Characteristics of the Future of Forensic Schedule Analysis**
  - **Better Methodologies**
  - **Better Technology**
  - **Less Law**
  - **Market Changes**

THE GOOD, THE UGLY, THE BAD, AND THE INEVITABLE

- **History of Forensic Schedule Delay Analysis**
  - Prior to 1865: Unknown
  - **1865-1950:** Legal proof depended on nexus of delay event to impact. **Engineers set the pace.**
  - **1950-1970:** Limited use of bar charts, start of CPM analysis. **Engineers and Attorneys set the pace.**
  - **1970-2015:** CPM analysis prevails. **Consultants and Attorneys set the pace.**
  - **2015 – Future:** CPM analysis prevails. **Construction Managers and Attorneys set the pace.**

The Future of Forensic Schedule Analysis

THE GOOD – BETTER METHODOLOGIES

THE GOOD – BETTER METHODOLOGIES

» There are at least 35 different named schedule delay methodologies in the literature

- AP vs. AB
- As-Built Critical Path
- As-Built Less Delay
- As-Planned v. As-Built
- As-Planned v. Update
- Bifurcated CPA
- But-For Analysis
- Collapsed As-Built (CAB)
- Contemporaneous Period Analysis
- Contemporaneous Project Analysis
- Contemporaneous Schedule Analysis
- Fragnet analysis
- Fragnet Insertion
- Half-Stepped Update Analysis

THE GOOD – BETTER METHODOLOGIES

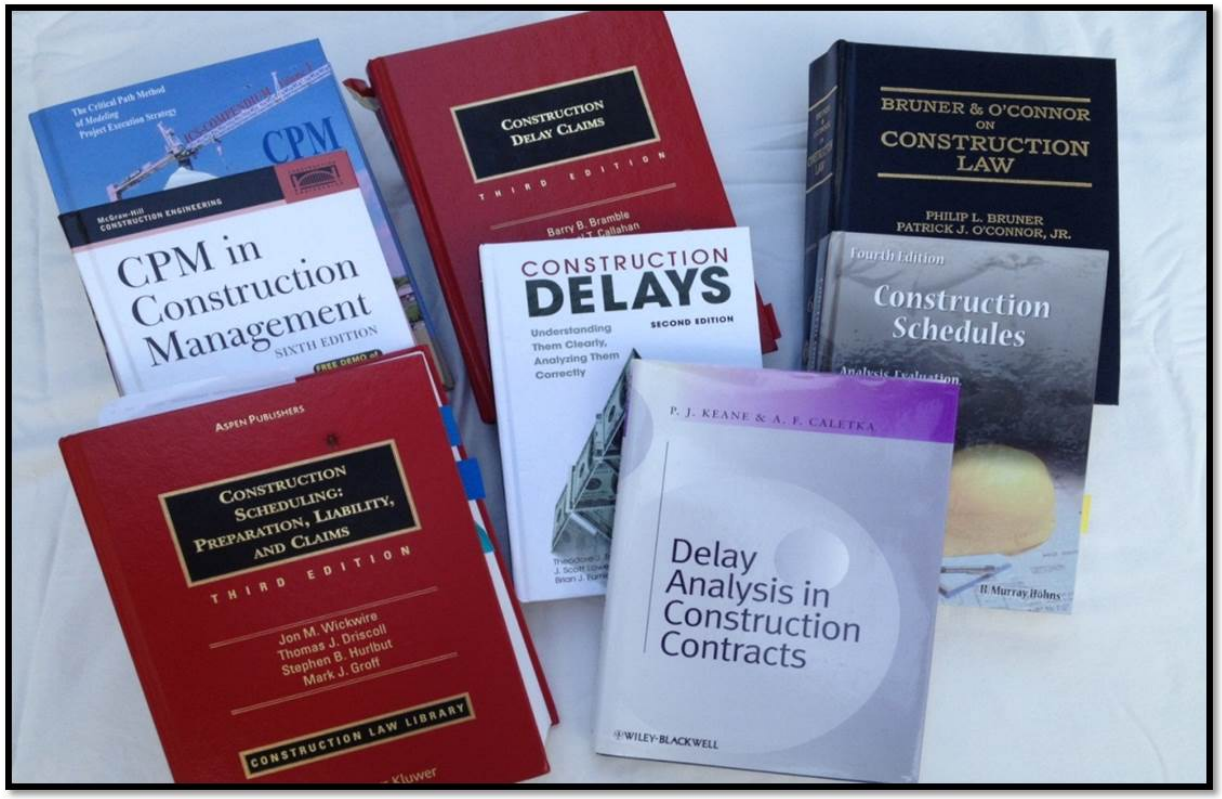
- Impacted As-Planned (IAP)
- Impacted Baseline (IB)
- Impacted Update Analysis
- Look-Back Window
- Modified As-Built
- Modified Update Analysis
- Month-to-Month
- Observational CPA
- Plan Plus Delay
- Planed v. Actual
- Reconstructed Update Analysis
- Time Impact Analysis (TIA)
- Time Impact Evaluation (TIE)
- Two-Stepped Update Analysis
- Update Analysis
- Window Analysis
- Windows As-Built But-For
- Windows Collapsed As-Built

THE GOOD – BETTER METHODOLOGIES

- There are a large number of ad-hoc methodologies that lack intellectual or peer recognition or rigor
- Few know what all the methodology names actually mean. For example, in the early 2000's virtually every methodology was called either a TIA or Windows, regardless of the actual technique
- Who knows what the **FLORA** methodology is?

THE GOOD – BETTER METHODOLOGIES

» Many Books on Schedule Delay describing Methods



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THE GOOD – BETTER METHODOLOGIES

- It was not just non-schedule delay experts who called all the methodologies one of these two names
- J. Wickwire and fellow authors presented detailed methodologies, but even they confused them
- The AACE Recommended Practice 29R-03 (2007) was the first step forward past this morass

THE GOOD – BETTER METHODOLOGIES

- The current RP29R-03 identifies nine different methodologies

  3.1. Observational / Static / Gross
  3.2. Observational / Static / Periodic
  3.3. Observational / Dynamic / Contemporaneous As-Is
  3.4. Observational / Dynamic / Contemporaneous Split
  3.5. Observational / Dynamic / Contemporaneous Modified or Recreated
  3.6. Modeled / Additive / Single Base
  3.7. Modeled / Additive / Multiple Base
  3.8. Modeled / Subtractive / Single Simulation
  3.9. Modeled / Subtractive / Multiple Base

- Depending on how fine-grain the definitions, there can be anywhere from 4 to an infinite number

THE GOOD – BETTER METHODOLOGIES

Observational	Static Logic	Gross	As-Planned vs. As-Built (MIP 3.1)
		Periodic	As-Planned vs. As-Built (MIP 3.2)
	Dynamic Logic	Contemporaneous As-Is	Contemporaneous Period Analysis (MIP 3.3)
		Bifurcated Contemporaneous	Bifurcated CPA (MIP 3.4)
		Recreated / Modified	Recreated CPA (MIP 3.5)
Modeled	Additive Model	Single Base	Impacted As-Planned (MIP 3.6)
		Multiple Base	Retrospective TIA (MIP 3.7)
	Subtractive Model	Single Simulation	Collapsed As-Built (Single) (MIP 3.8)
		Multiple Simulation	Collapsed As-Built (Multiple) (MIP 3.9)

THE GOOD – BETTER METHODOLOGIES

- **The Strength of RP29R-03 is primarily in its non-methodological protocols:**
  - Baseline Schedules
  - As-Built Schedules
  - Updates
  - Delay Events
  - Excusability/Compensability
  - Concurrent Delay
  - Critical Path and Float
  - Mitigation and Constructive Acceleration

THE GOOD – BETTER METHODOLOGIES

- RP29R-03 is distinguished from all other methodology compendiums and guides by Section 5 – **Choosing a method**
- Eleven considerations of choosing a methodology are divided into:
  - **Facts**
  - **Technical**
  - **Commercial**

THE GOOD – BETTER METHODOLOGIES

- Choosing a method – **Facts of the Case**
  1. Contractual Requirements
  2. Issues to be Claimed
  3. Legal or Procedural Requirements Including Custom and Usage of Methods on the Project of the Case
  4. Forum for Resolution and Audience

THE GOOD – BETTER METHODOLOGIES

Choosing a method - **Purpose of Analysis**

Forensic Use of Analysis	METHOD								
	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9
Non-Compensable Time Extension	OK	OK	OK	OK	OK	OK	OK	OK	OK
Compensable Delay	OK	OK	OK	OK	OK			OK	OK
Right to Finish Early Compensable Delay								OK	OK
Entitlement to Early Completion Bonus	OK	OK	OK	OK	OK	OK	OK	OK	OK
Disruption Without Project Delay	OK	OK	OK	OK	OK	OK	OK		
Constructive Acceleration				OK		OK	OK		

THE GOOD – BETTER METHODOLOGIES

- Choosing a method – **Technical Considerations**
  5. Source Data Availability and Reliability
  6. Complexity of the Dispute
  7. Time Allowed for Forensic Schedule Analysis
  8. Expertise of the Forensic Schedule Analyst and Resources Available

THE GOOD – BETTER METHODOLOGIES

Choosing a method - **Source Data Availability and Reliability**

Source Schedules or Data	METHOD								
	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9
Baseline Schedule	Min.	Min.				Min.	Min.		
Schedule Updates			Min.	Min.			Min.		Min.
As-Built Record	Min.	Min.			Min.			Min.	Min.

THE GOOD – BETTER METHODOLOGIES

- Choosing a method – **Commercial Considerations**

9. Size of the Dispute
10. Budget for Forensic Schedule Analysis
11. Custom and Usage of Methods

THE GOOD – BETTER METHODOLOGIES

- Why do different methodologies give different results?
- Measure different things:
  - Past delays
  - Sequential Past/Future Delays
  - Future projected delays
  - Estimated/recalculated delays
- Different priorities
- Different facts

THE GOOD – BETTER METHODOLOGIES

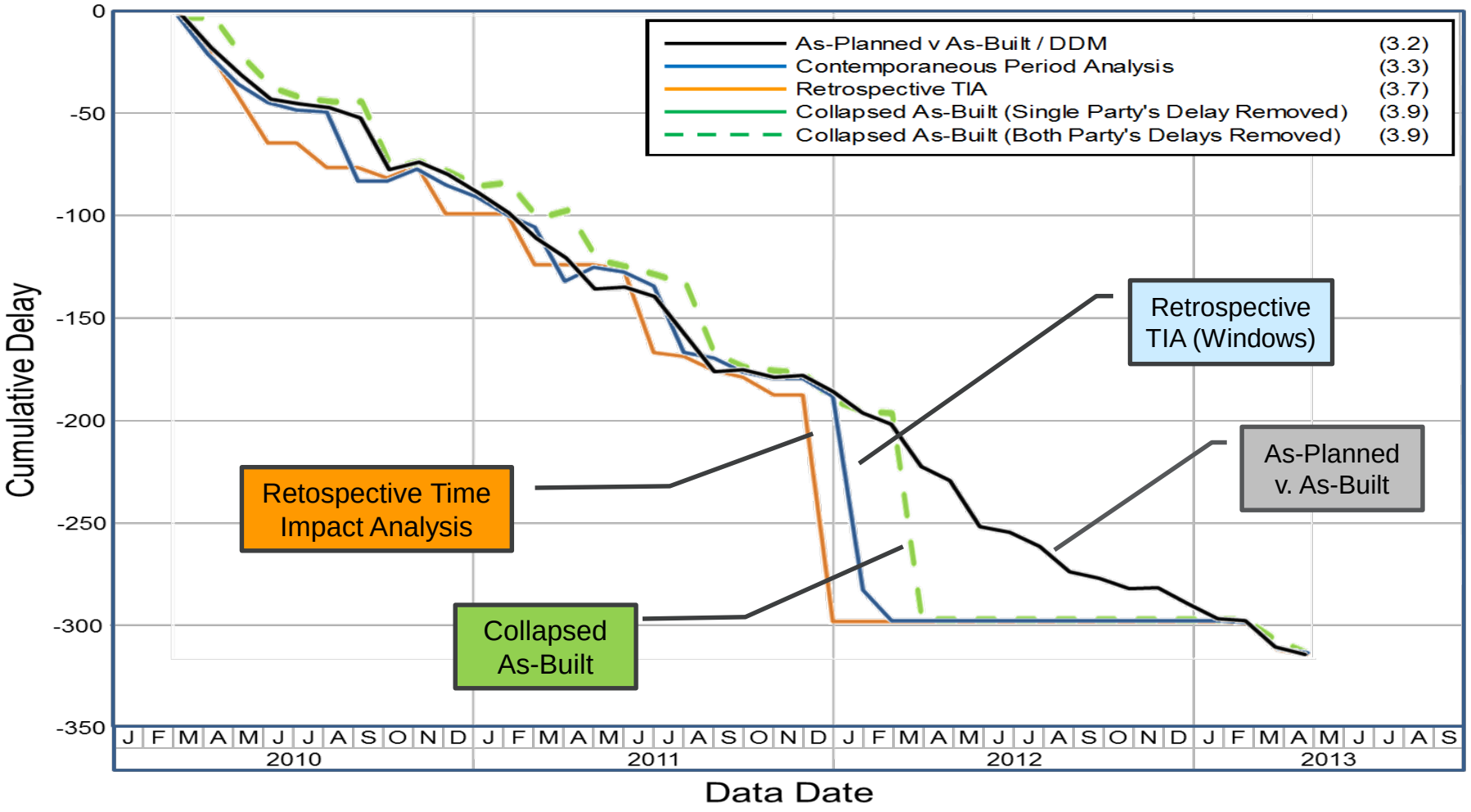
- Why do Experts reach different answers?
  - Experts use methodologies they are comfortable with.
  - Experts use methodologies predicated on the available data.
  - Experts use methodologies they think will portray their clients case in a most favorable light (this is not prostitution).
  - Experts should consider the factors in Section 5 of the AACE RP29R-03.

THE GOOD – BETTER METHODOLOGIES

» What the methods measure:

- **As-Planned v. As-Built** method measure delays against the original baseline schedule and does not reflect updates or changes in the plan.
- **Contemporaneous Period Analysis** measure delays on a month-by-month basis against the then current update.
- **Impacted-As-Planned** method calculates anticipated prospective delays against the original baseline schedule.
- **Time Impact Analysis** measures the anticipated impact of delays against an active CPM on a periodic basis.
- **Collapsed-as-Built** measures delays as a residue of the analysis.

THE GOOD – BETTER METHODOLOGIES



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The Future of Forensic Schedule Analysis

THE UGLY – LOTS OF DATA

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- Construction cases have always had lots of data
- Historically (10 years ago) data was measured in Banneker boxes
- Substantial decisions on firm selection revolve around data management

THE UGLY – LOTS OF DATA

- Data is essential for CPM creation
- Scheduler should consult with:
  - Project Manager
  - Contract Documents
  - Historical Productivity
  - Historical Experience
- As large as this data set is, it pales compared to Forensic needs

THE UGLY – LOTS OF DATA

- **More data is needed for Forensic Analysis**

*"[The level of detail that] may be adequate for project controls may not be adequate for forensic scheduling … the initial focus here is in assuring the functional utility of the CPM baseline schedule for purpose of analysis as opposed to assuring the reasonableness of the information that is represented by the data or optimization of the schedule logic." **

** AACE RP29R-03*

THE UGLY – LOTS OF DATA

- Computerized PM software
- BIM
- Email – the ugliest of data sources
  - Managing the project through email
  - CCs and BCCs

THE UGLY – LOTS OF DATA

- The double edged sword
  - Electronic data never gets lost, is serachable, and abundant
  - Electronic data is so plentiful its like finding a needle in a haystack
- Expert systems
  - Discovery rules
  - Cost

The Future of Forensic Schedule Analysis

THE BAD –
NO NEW CPM LAW

THE BAD – NO NEW CPM LAW

- **Few Existing Decisions**
- **Fewer New Decisions**
  - The Rise of ADR
  - The Cost of Litigation
  - The Uncertainty of Litigation

THE BAD – NO NEW CPM LAW

- What should a baseline schedule include?
- How resource loaded schedules should be evaluated?
- Does it matter what scheduling software is used?

THE BAD – NO NEW CPM LAW

- How should risk-adjusted schedules be evaluated?
- What is the role of preferential logic and identification of the critical path?
- Should there be a standard for float ownership?

THE BAD – NO NEW CPM LAW

- Who has responsibility for future delays caused by past delays?
- How reasonable does the schedule need to be to prove a right to finish early?
- How can schedule coordination be enforced among different prime contractors?
- What is concurrent delay?

THE BAD – NO NEW CPM LAW

- **Role for Experts**
  - Restatements
  - Scholarly Articles
  - AACE Recommended Practices
  - Alternative – The Wild-Wild West

The Future of Forensic Schedule Analysis

THE INEVITABLE – COMMERCIAL REALITY

THE INEVITABLE – COMMERCIAL REALITY

- **Three future roles for Experts**
  - Real-time project schedule/delay management
  - Expert Commoditization
  - Big Guns

THE INEVITABLE – COMMERCIAL REALITY

- **Real-time project schedule/delay management**
  - Claims moving upstream
  - Common right now
  - Work often performed by contract specialists
  - Work often performed by schedulers
  - Huge pay scale and skill differences between claims consultants and contract specialists

THE INEVITABLE – COMMERCIAL REALITY

- **Expert Commoditization**
  - Part of CM team
  - Little expert knowledge
  - Reinvents the wheel
  - CM rates and Forensic pay rates differ widely
  - Public contracts and the lowest bid

THE INEVITABLE – COMMERCIAL REALITY

- **Big Guns**
  - Big Guns will always have work
  - More competition as litigation/arbitration decline

THE INEVITABLE – COMMERCIAL REALITY

- **Hired Guns**
  - Commoditization promotes Hired Guns
  - AACE/CFCC ethical standards may become more important

The Future of Forensic Schedule Analysis

SMOKE, MIRRORS, AND FOG

SMOKE, MIRRORS, AND FOG

- Unqualified Experts
- Software Manipulation
- CPM Deficiencies

SMOKE, MIRRORS, AND FOG

- **Unqualified Experts**
  - PE is not a Guarantee
  - P3/P6 knowledge does not make an expert
  - AACE and the Role of Experts (CFCC)

SMOKE, MIRRORS, AND FOG

- **Software Manipulation**
  - P3/P6 too flexible
  - Inexperience desk jockeys
  - 10 years since Rotten Bananas

SMOKE, MIRRORS, AND FOG

- **CPM Deficiencies**
  - Large projects with lots of discretionary logic
  - Non-CPM alternatives
  - Role of better schedules

The Future of Forensic Schedule Analysis

CONCLUSION

CONCLUSION

- Less need for experts
- Less law
- More competition

Questions?

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