

## **(PS2950)**

### **Author vs Typist: A Reflection on the Role of the Scheduler in Commercial Construction**

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#### **Abstract**

In this paper, the analogy of the role of the author compared to that of the typist is used to bring to light the diminished role of the construction scheduler, as it has often become, compared to what the role of an experienced professional scheduler truly is. The full scope of this role will be emphasized.

Many challenges have been caused by this diminished role, so how did it get whittled down into little more than a data entry technician? A few examples of how the responsibilities of the professional scheduler are parceled out to other busy members of the project team will shed light on this answer.

Finally, leveraging the full extent of the role of a commercial construction scheduler will be shown to alleviate the confusion and resolve most challenges before they seriously compromise the project's scheduled completion.

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## **Introduction**

Analogies are a useful tool of perspective to call attention to a parallel situation in life; professional or private. Such is the analogy of the author versus the typist, from the title of this paper. Understanding the difference between an author and a typist establishes a stark contrast in the sense of ownership, the level of creativity and active participation that these two roles have within a written project. This paper will delve into this contrast in more detail.

This paper will proceed to use the author versus typist analogy to construct the contrasts between the true role of the professional scheduler and the oversimplified role which has become that of a schedule data entry clerk.

The challenges created by the diminished role of the project scheduler and the reassignment of the scheduler's duties will be addressed. Questions will be asked for the benefit of the reader to ponder. Hopefully, their honest answers will enlighten project teams as to how they perceive, define and utilize the scheduler. These questions should also provoke schedulers to consider how they view their role within the project and the construction industry.

The benefits of utilizing true professional schedulers will be highlighted, and statistics and testimonials will be presented to support these benefit claims. And three tips will be given that can help the construction industry leverage the talents and skills of professional schedulers.

In conclusion, this paper will attempt to sway industry leaders to reinstate the professionalism of the scheduler and encourage schedulers to own the role, increasing their value. Whatever increase in cost is incurred from hiring a professional scheduler with the full scope of skills and knowledge presented in this paper is negligible compared to the resulting costs of not having access to such a scheduler.

## **Author vs Typist**

Understanding the difference between the roles of an author and a typist is much easier than understanding the difference between the roles of a professional scheduler and the frequent conception of a scheduler.

Few would deny that authors are usually the originators of their projects or are at least the constructors who give life to the story before it is typed. The words originate in the head of the author, but not in the head of the typist.

### *The Author*

An author, working as an author, is also a typist, but a typist, working as a typist, is not an author.

The author starts with an idea, defines the plot, develops the characters, sketches out the settings and the outline of the written project which he undertakes.

He sends out queries for publisher buy-in and involves his agent, editor or other stakeholders and staff. He does this knowing that his work must satisfy the reader, his editor, and his publisher, as well as himself.

He has the authority to change the original plot and outline if needed.

The author must update the story often, guided by its outline and the intent of its storyline. These updates continue throughout the life of the work until its publication.

The many hats of an author include:

- Artist – The author paints pictures with words. What is written sparks a mental image in the mind of the reader. Without skill, the words are flat and dull, or worse, lack clarity and spark confusion.
- Inquisitor – The author asks questions and knows how, when and where to lead the reader to ask questions. That desire to know the answers keeps the reader reading through to the end of the story.
- Researcher – The author is curious, asks questions, but must be prepared with the answers to those questions which makeup the content of her work. Whether fiction or non-fiction, these questions must have reasonable answers, if not always logical.
- Problem solver – The author writes about problems, whether they are problems encountered by her characters or they are problems faced by herself or her readers. Within the body of her work she creatively analyzes the trouble and writes out solutions. These solutions may seem great at first, but upon first or second reading, or later within the story, they either create more problems or some piece of the solution was flawed in the logic. This is where her research is critical, and questions are critical. She knows when to seek expert advice on subjects to work through the solutions. Fortunately, the author has the luxury to rework the story up until the finish.
- Communicator – As a communicator, the author must understand the nuances of language, both oral and written.
- Designer – The author builds intricate designs with words, sometimes entire worlds and universes as was the case with J.R.R. Tolkien's *The Hobbit* and *The Lord of the Rings* trilogy.
- Typist

### *The Typist*

The mentality of a typist is that of a data entry technician – they accurately and efficiently retrieve, enter and record information, creating reports based on this information when needed.

The typist is a proofreader, skilled, dexterous on the keyboard, and well versed with word processing software such as Word.

She must produce a finished product that accurately represents the information required within the documentation.

The skills and abilities of the typist include:

- Typing proficiency
- Software proficiency
- Report composition skills
- Proofreading skills
- Business communications skills

### **The Professional Scheduler vs. the Schedule Data Entry Clerk**

#### *The Professional Scheduler*

The professional scheduler authors the biography of the construction project.

She participates in shaping the plan, assisting with leadership buy-in, involving project staff and stakeholders, then proceeds with developing the work breakdown structure.

She crafts the schedule, mapping the critical path of project execution.

She updates the schedule with regular frequency, keeping her eye on the baseline, making changes to the baseline as necessary to keep her schedule accurate and true to the real-time progress of the project.

Though she does not have the authority to change start and finish dates, she has the responsibility of recommending changes when the progress tracked proves the original dates unrealistic, or when unforeseen challenges in the project's execution dictate that changes be made.

Her story is unfinished until the project is finished. Her schedule and sequential reports reflect the project's history, becoming lessons learned for future projects.

All this is done with the understanding that the schedule must satisfy the needs of the owner, project manager, team members and other stakeholders.

The many hats of the professional scheduler are as follow:

- Artist – The professional scheduler sculpts with time, carving out blocks of it to represent the activities necessary to complete the project. What is depicted on the schedule should

create an image of the project within the minds of the project manager, owner, team members and stakeholders.

- Inquisitor – The scheduling pro asks questions and knows how, when and where to lead the PM, owner, team members and stakeholders to determine the activities required to execute the project and the realistic time necessary for each activity completion. She will inspire and encourage coordinated planning for a reliable schedule. She must keep the schedule users asking questions when her reports point out delays in the project.
- Researcher – The scheduling pro is curious, asks questions, but must be prepared with the answers to those questions which make up the content of her WBS, schedule, critical path and project progress updates measured against her schedule. She must know what questions to ask when the actual progress does not match up with the schedule start and finish dates. Part of her research involves meeting attendance and site visits when warranted for accurate reports.
- Problem solver – The scheduler has an eye for spotting problems in the form of delays, whether they are unforeseen challenges such as weather, city inspections, or not enough human resources to complete specific activities within the time allotted by the schedule. Within the body of her work, she analyzes the trouble and suggests possible solutions or encourages the team to find remedies to bring the project back on target for scheduled completion.
- Communicator – As a communicator, the professional scheduler must understand the nuances of language, both oral and written, as well as her software. Her reports educate decision makers, so her progress reports must clearly convey critical issues to them.
- Designer – The scheduling pro designs the schedule. Good schedule design
  - Plans the schedule development effort, which meets the criteria for a project in itself
  - Keeps the schedule development process on track
  - Prevents rework due to late understanding of needs
  - Facilitates buy-in from end users early in the planning and scheduling process
  - Makes schedule development sessions more meaningful
- Schedule Data Entry Clerk

### *The Schedule Data Entry Clerk*

The role of the schedule data entry clerk, which is what the role of the professional scheduler has become, is not without skills or a place in a project controls team. Schedule data entry clerks’

skills and responsibilities are advantageous when coordinated with a professional lead scheduler within a team.

The abilities of the schedule data entry clerk include:

- Knowledge of CPM scheduling
- Construct schedule and code activities according to WBS
- Efficiency with varied scheduling, spreadsheet, presentation and document software
- Strong organizational, presentation and written skills
- Ability to work with project team to obtain project updates
- Ability to work with other scheduler professionals in a collaborative manner

The same way the parallels between the author and professional scheduler and the typist and the schedule data entry clerk exist, there is also an expected parallel between the written work and the schedule. Establishing this similarity between the product of the author/typist and that of the professional scheduler/schedule data entry clerk is important to creating the connection between the perception and appreciation of the product to the perception and appreciation of the producer.

The parallels of crafting a written project to that of crafting a schedule are shown in the figure below.

<i>Parallels of Written Project and Schedule</i>	
Idea for story	Intent of project
Outline	Work Breakdown Structure
Character Development	Identifying the project team members who will be resources for schedule development and project progress information.
Plot	Critical Path
Setting	Start and Finish Dates and Locations
Story	Schedule
Readership – Audience type such as women between ages of 18 and 24.	Readership – Project Decision Makers and Participants

Table 1 - Parallels of Written Project and Schedule

The parallels between the author and professional scheduler, the typist and the schedule data entry clerk, as well as the written work and the schedule, have been established to validate the title analogy. This analogy clarifies the differences between the professional scheduler and the schedule data entry clerk.

Few would diminish the role of an author to that of a typist, so why has the role of the professional scheduler been so unfortunate as to become diminished to that of the schedule data entry clerk? It is time to consider why.

### **The Diminished Role of the Professional Scheduler**

The role of the scheduler often does not exist on a project team (in commercial construction) or has been greatly diminished for a multitude of reasons. These reasons can be enumerated as follows:

#### *Reason 1—The Lack of Importance given to the Planning and Scheduling Effort*

The importance of scheduling and its partner planning to construction management has not been fully realized by the industry.

Often no plan exists for schedule development, and poorly planned schedules result. Even PMBOK Guide establishes scheduling planning as part of project planning and not a separate process. Therefore, scheduling design has a relatively low profile in comparison to the conspicuous project management processes and can be overlooked or treated summarily. [3, p.24]

How can the role of professional schedulers be appreciated when the work they do is considered a means to fulfill contract obligations, a nice convenience or a mere character sketch to kick-off the project execution? When their work is viewed as a priority, their role will be fully valued.

Establishing the scheduler's work as a priority will go a long way towards leading the construction industry to fully appreciate and utilize the true role of the professional scheduler. Examine how scheduling is a vital tool in both the daily management and reporting of the project's progress: it goes beyond just what is on paper. [1]

- **Organizing/WBS:**

Organizing is concerned with the division of the total construction work into manageable departments/sections and systematically managing various operations by delegating specific activities to individuals. The schedule development process involves the logical breakdown of work, sections, and delegation, as well as time allotments for tasks.

- **Resource Allocation:**

Staffing is the provision of the right people to each section/department created for successful completion of a construction project. Schedule development involves not only

proper staffing for the scheduling and controls but also inclusion of subcontractors', owners' and suppliers' contributions at key times during the project's execution.

- Directing:

It is concerned with training project team members to carry out assigned tasks, supervising their work and guiding their efforts. It also involves motivating staff to achieve desired results. The schedule and update progress reports are motivational tools for timely progress when used appropriately.

- Controlling:

It involves a constant review of the work plan to check on actual achievements and to discover and rectify deviation through appropriate corrective measures. Schedule updates and reports on monthly, weekly project status compared to the baseline schedule are important tools for review and trouble shooting of a project's progress.

- Coordinating:

It involves bringing together and organizing the work of various departments and sections, producing good communications. It is necessary for each section to be aware of its role and the assistance to be expected from others. [1] The schedule, updates and reports, when integrated properly into communications, keep all departments, decision makers, subcontractors and other stakeholders on the same page as to the project's real-time progress and should be used during planning sessions and meetings to involve input from the key players in the project's execution. AACE includes the development and sequencing of activities and estimating their duration in schedule design. For AACE, then, schedule development is focused on iteratively refining the schedule based on the allocation of available resources. [3, p.13]

### *Reason 2—Role of PC based scheduling Software*

With the development of PC based scheduling software, many project managers assured their bosses that they could produce the schedule themselves.

A paradigm shift resulted and in the 1980's, an estimated 90% of seasoned professional schedulers had changed jobs, becoming project managers, procurement agents, field engineers, any position other than that of a scheduler. [4, p. 20]

But fancy software in the hands of the project manager could not be the grand solution to bringing projects in on time and within budget, and here are two glaring examples why not:

1. Microsoft Corporation had sold more than a million copies of Microsoft Project, yet the failure rate on business and projects remains high (PMI 2014).
2. The general business problem is that project managers are unable to deliver construction projects on time. The specific problem is that some project managers lack strategies to manage on-time construction projects. [5, p. 1]

Despite these observations, in the construction industry, the misconception still exists that scheduling software will produce an accurate and helpful schedule; that entering data into it will produce effective scheduling. Relying on the computer to identify the best execution strategy is an increasingly troubling trend. [4, p. xxi]

The truth is that the software's product is only as good as the data entered, only useful when regularly updated, and accurate reports of actual progress as compared to the baseline schedule are examined. A professional scheduler will do these and more.

**The tragic error of management was in not recognizing that seasoned Schedulers brought more to the project than just the ability to draw boxes and type on a keyboard. They understood the cause and effect dynamics of the project in a way that few others, including the project manager ever could** (Murray Wolf, p. 20). [4]

### *Reason 3—Reliance on Software*

The industry puts too much reliance on the software program, without assurance that the users thoroughly understand all the intricacies and trappings of the program.

The proliferation of marginally useful technology is not just a case of excess; it's a case of erosion.

The CPM's ability to simulate a future reality is its utter charm. The heart of that ability is the logic tie, the link between two activities that states that the Activity B is somehow dependent upon Activity A. CPM is beautifully simple. Virtually any dependent relationship can be portrayed with only activities and their durations. [4, p. 18]

The problem is that damage can come to a project schedule, intentionally or unintentionally, from excessive or inappropriate date-constraint use. When schedulers do not understand the full implications of data constraints, yet still pepper their project schedules with an excess of imposed dates, they often destroy its very credibility.

Basically, without understanding the impact and necessity of certain new bells and whistles — the schedule can be rendered ineffective, unreasonable or in error! Be advised, when using scheduling software do not stray far from basic logic and durations. [4, p. 19, 20]

**All the rest is trappings, so keep this question in mind at all times, who set the trap** (Murray Wolfe, p. 20)? [4]

Without a thorough understanding of the scheduling practice, the software and the results it produces, all major players in project management should be more cautious about trusting their reputations and the success of the project to the information generated. [2, p.20]

As an author must be concerned with wordiness, so also the scheduler must be concerned with too much minutia and too many trappings.

### *Reason 4—The Issue of Roles and Responsibilities*

Many in the industry see the project schedule as being the project manager's responsibility, with scheduling personnel merely providing clerical/technical assistance. [2, p. 24]

A common misconception within project management is that scheduling is just scheduling tasks. [5] Therefore, the assumption of many is that PMs are better qualified to schedule tasks since they know more about the process of executing the project. Unfortunately, for the sake of time, someone other than the PM is given the chore of data entry into the PM's schedule. This assistance from the scheduling personnel does not equal the support, perspective or expertise of the professional scheduler.

#### *Reason 5—Lack of Comprehension in Reports*

Others dislike the dry, narrow and often cold appearance of scheduling products and services and use them ever so sparingly, only to support management reports. [2, p. 24]

Upper management is to blame for much of the erosion of the scheduling practice as a useful science. Examples can be drawn from as early as the late 1970s of owners being more impressed with glossy bar charts than content-pertinent diagrams. They have left themselves open to acts of deception and misrepresentation by those who have something to gain by keeping the boss convinced that “all is well.”

How easy is it for a PM, if he controls the schedule and scheduling process, to use some of the “bells and whistles” to give his project team extra slack in the schedule, even though it may be done subconsciously? A professional scheduler is more interested in producing a schedule that accurately represents the real-time of a project and has a more detached perspective to keep the schedule honest.

Also, if the schedule is only used occasionally to support management reports, those who are leading in the project trenches are not usually in the information loop. How can management fairly assess work performance based on a schedule the work supervisors are vaguely familiar with and have little motivation to follow? If management has little respect for the schedule, then those performing the work have even less.

With such attitudes toward the schedule, how surprising is it that schedulers receive little respect as a profession? Even those who are professionals, who attempt to present accurate schedules, timely reports and extract needed information from the job site are frequently treated as mere gophers (go-fors) or, worse, like dentists extracting teeth. These attitudes are a matter of priority and perceived authority. In scheduling, command comes with ownership of the schedule, its upkeep, meetings, and project progress reports.

#### *Reason 6—Convoluting the Role of Schedules*

Project schedules began to lose their time-management potency once the project schedule was given the additional role of record keeping and creating a to do list that would satisfy PMs, owners, stakeholders, and others claiming part ownership of the professional scheduler's role.

This additional role bogged down the project schedule's lean, time-calculating machinery, making the software program and schedule less reliable, while seemingly being the all-in-one solution to every project player's time and resource management needs. [2, p. 30]

Thus, the professional scheduler had transitioned to a schedule data entry clerk that assisted the PM with scheduling duties and further morphed into a schedule data entry clerk that caters to a variety of project stakeholders and decision makers who hold conflicting interests in the project's delivery.

Unfortunately, unlike the professional scheduler, who pulls all key players together in collaboration to gather the input necessary for realistic schedules, pertinent progress reports, and solutions-oriented planning sessions, the schedule data entry clerk's focus is pulled in multiple directions: no one is truly on the same page.

All the previous reasons why the role of the professional scheduler has been diminished to that of a schedule data entry clerk, along with the deficiency of experience, skill, knowledge and perspective left by the vacancy of the professional scheduler have had consequences upon project delivery in the construction industry. There should be no surprise to learn of resulting challenges brought to construction management because of it.

### **Challenges**

Statistics show that despite continued advances in scheduling software and a surge of scheduling training, projects still work over-time and budgets continue to overrun because of poor scheduling and project management practices. [2, p. 20]

The authors contend that without bringing the necessary professionalism and skills back into the role of the scheduler and fully utilizing the professional, such problems will continue to plague projects.

Included is research that gives evidence for challenges related to scheduling issues, as well as a lack of appreciation for the scheduler and scheduling.

This noteworthy study was found to be a useful example from which to extract challenges relevant to this paper. "Assessing the Costs Attributed to Project Delays," by Curtis Beaty, P.E. et al., <ftp://ftp.dot.state.tx.us/pub/txdot-info/fed/project-delay-summary.pdf>

The exact excerpt is used because it is relevant to a point made later in the paper about the mindset of the industry.

"In most cases examined in this study, delay occurred because the project missed a milestone according to the project schedule dates established by the project engineer and the respective TxDOT district.

"In today's complex construction projects, conducted research shows that delay is caused from various factors such as poor site management, labor and productivity shortage, poor communication, etc. A very strong concentration in delay relevant causes, however, results from poor planning and control. This study did not examine the scheduling process that occurs during

the planning/scoping phase of the project life cycle to see if that aspect of a project (i.e., overly optimistic schedules) might be an inherent source of delay ( Curtis Beaty, P.E. et al.).”

The figure below summarizes the findings.

<b>CAUSES FOR CONSTRUCTION SITE DELAY</b>	
<b>Contractor related:</b> Delays in work progress, time extensions, financial failure of the contractor, technical inadequacy of the contractor, tendering, quality of work	<b>30.2%</b>
<b>Design related:</b> Design errors, inadequate/incomplete specifications, quality of design, availability of information	<b>25.4%</b>
<b>Contract related:</b> Ambiguities in contract documents, different interpretations of contract provisions, risk allocation, other contractual problems	<b>25.4%</b>
<b>Owner related:</b> Variations initiated by the owner, change of scope, late giving of possession, acceleration, unrealistic expectations, payment delays	<b>9.0%</b>
<b>External factors:</b> Weather, legal and economic factors, fragmented structure of the sector	<b>4.0%</b>
<b>Site conditions:</b> Site conditions, unforeseen changes	<b>3.7%</b>
<b>Human behavior related:</b> Adversarial/controversial culture, lack of communication, lack of team spirit	<b>2.7%</b>

Table 2 – Causes for Construction Site Delay, (Table created by Milestone Consultants based on the study by Curtis Beaty, P.E. et al.) <http://levox.com/construction-sites-delay-statistics/>

Of interest is that this study and its chart reveal how schedules are taken for granted and verifies the general inclination of the industry to overlook the importance of scheduling and thus the important role of the scheduler. In this study, it was an afterthought to consider how the scheduling process and schedule might have contributed to delays or measured progress inaccurately. This study's main focus was on other aspects of project development and delivery, verifying the view that scheduling, schedulers, and schedules are underrated in purpose, importance and influence for the good.

Regardless of this flaw in this study, valuable insights were drawn from its findings. An examination of the causes in Figure 2 resulted in a list of causes where the scheduling process plays a direct role in delays.

- Contractor related
  - Delays in work progress
  - Time extensions
  - Tendering
  - Contract related
  - Other contractual problems
- Owner related
  - Late giving of possession
  - Unrealistic expectations
  - Payment delays
- External related
  - Fragmented Structure of the Sector

Causes indirectly attributed to the scheduling process are also listed below. Though it may seem a stretch to connect poor scheduling to some of these challenges, there is a domino effect caused which can lead to them.

- Contractor related
  - Financial failure of the contractor – a flaw in the planning and scheduling process will consistently create problems and can result in devastating claims resolutions or loss of contracts do to a poor reputation.
  - Technical inadequacies of the contractor—though contractors either have the necessary skills to execute the project or they do not, poor scheduling practices can reflect poorly upon those skills.

- Quality of work – Poor scheduling practices can cause poor work quality through resulting delays and the scramble to fix them. Quality of scheduling enhances work quality through proper planning and monitoring.
- Design related
  - Availability of information – A professional scheduler would understand what information is needed for planning the project and constructing a schedule in a timely manner. His/her communications skills should bring the lack of information to the attention of the appropriate leaders.
  - Contract related – If the scheduler, schedule design process or schedule development process is inadequate, the schedule will not represent the project as it should to meet contract expectations.
  - Ambiguities in contract documents – These ambiguities can be easily overlooked when the schedule design process is inadequate.
  - Risk allocation – Poor schedule design and development can result in a lack of clarity of the most beneficial risk allocation to all parties within the contract.
- External Factors
  - Legal and economic factors – A poorly designed, developed and maintained schedule results in a lack of support and/or credibility for or against claims.

Relevant to the paper's argument are the additional and concurrent challenges and notations taken from the results of a study featured in Paul Shamp's, "2017 Scheduling Strategies for Construction Project Managers Toward On-Time Delivery."

- Construction personnel use scheduling techniques that often produce schedules that cause inconvenient resource fluctuations that are costly in execution. [5]

This citation shows a challenge created by trusting the responsibilities of scheduling design, development and implementation to either random team members or a schedule data entry clerk, instead of skilled professional scheduler. Using the paper's analogy, the author is responsible for shaping information, whether original or supplied, into a readable, marketable work. This is also true for the professional scheduler, who must provide a readable, realistic baseline schedule that accurately represents the project's execution timeline.
- Focusing on organizations' individual professional capabilities has resulted in construction teams working toward individually defined objectives, often in disagreement with other team members. Part of the reason for poor performance of product delivery in the construction industry is the inability of project participants to work collaboratively. [5, p.14]
- One common source of chaos that plagues construction projects with severe and costly problems is project managers who lack skills, knowledge, experience or talent

in various components of construction management and lack the proper support or guidance to enhance their management efforts. [5, p.15] Not only has the industry placed even more responsibility upon the project manager and required even more expertise of him in performing the professional scheduler's duties, it has taken away a critical pillar of support and guidance from the project manager.

Where the primary role of an author is to provide a written project that will benefit his readers, the primary role of a professional scheduler is to support the project manager, to meet his requirements first and foremost. [4, p. 51]

By taking away the supporting role of the professional scheduler from the project manager and placing his additional responsibilities onto the PM, the industry has effectively put blinders on and hobbled the PM from completing the race to the project's targeted finish date within budget.

- When PMs acquired ownership of the schedule development and management process, they acquired extra responsibilities to their already heavy workload. Because of this workload and their familiarity with construction project processes, they felt little need to ask process questions or coordinate with other stakeholders and team members (subs, too). Nor could they devote the necessary time to properly design and develop the schedule. Thus, what PMs do not have time to do with the schedule becomes allocated to someone else, the schedule data entry clerk, or worse, another busy member of the project team.
- Project managers' scheduling issues in the timeline, planning, and designing of construction projects often suffer time delays, cost overrun, and quality defects. Thirty percent of construction projects either run over budget or fail to complete due to time constraints and a lack of effective project management [5, p.1]
- Construction projects are often challenged from the start. And, those that begin poorly rarely get back on track; they lose collective focus, and excessive time and energy are spent correcting mistakes rather than forging ahead with the schedule. When analyzing the literature research, the timeline schedule is a factor in the completion of the project; more accurately, the baseline schedule development phase is a potential source of poor project planning, leading to problems in completing on time. [5, p.18]

These challenges have resulted in a continuing scramble of solutions from new methodologies, software development, fancy technological gadgets, and more all in attempt to resolve them but without the practical, commonsense applications of the professional scheduler.

The authors' challenge is to bring to the attention of contractors, owners, and project managers the diminished role of the scheduler and the lack of priority given to quality scheduling. This is especially difficult when many in the industry believe they have adequate scheduling practices in place.

How does one open their eyes to see what may be overlooked? Ask questions.

### **Time to Examine Perceptions and Priorities**

In light of the reasons for the diminishing of the scheduler's role and the resulting challenges, those in the industry should ask the following questions to examine their perceptions of schedulers, scheduling and the level of priority placed on them in respect to planning and project execution.

1. How often does the company develop a formal baseline schedule during planning?
  - a. Every Project
  - b. Greater than 50% of projects, but not all
  - c. Less than 50% of projects
  - d. Never
2. If it is not developed for every project, does the size of the project determine whether a formal baseline schedule is developed or not?
  - a. Yes
  - b. No
3. How often is the schedule updated?
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. As needed
4. Who is involved in creating the schedule?
  - a. Project Manager
  - b. Superintendent
  - c. Scheduler
  - d. Estimator
  - e. All of the above
5. Who manages/updates the schedule?
  - a. Project Manager
  - b. Superintendent

- c. Scheduler
  - d. Estimator
6. Are subs included in the planning/updating of the project schedule?
- a. Yes, always
  - b. Yes, as needed
  - c. No, provide outputs only
7. Does the project team have a dedicated scheduler?
- a. Yes
  - b. No
8. Which of the following functions is performed by the scheduler?
- a. Development of scope based on drawings and specs
  - b. Prioritize equipment submittals procurement
  - c. Planning
  - d. Facilitating inputs/plan w/subs
  - e. Jobsite walks for status review
  - f. Updates to the schedule
  - g. Analysis of status, delays and risks
  - h. Reporting and communicating the schedule to the project team
9. What percentage of projects finish per the baseline dates (on time)?
- a. less than 25%
  - b. 25 to 50%
  - c. 51 to 79%
  - d. greater than 80%
10. Of the percentages of projects finished on time, what percentage met the budgeted dollar amount?
- a. less than 25%
  - b. 25 to 50%
  - c. 51-79%
  - d. greater than 80%

These questions and an inventory of the number of challenges and reasons presented in this paper can be used by the project management team in the planning stages of the project to examine the need for improvements in the project planning and scheduling development process. During this consideration, also add the weight of the benefits of having a professional scheduler on the team.

## **Benefits**

From research and over twenty-five years of experience in project management, planning, scheduling, controls and reporting, the authors maintain these benefits result when professional schedulers are engaged on the project team:

- Professional schedulers ask the right questions and coordinate with other stakeholders and team members to get the input necessary to develop a realistic schedule. Therefore, the project team will be guided by a readable baseline schedule that accurately represents the project's execution timeline.
- When there is professional scheduler dedicated to the schedule, sufficient time and focus are devoted to schedule design, schedule development, and schedule completion as well as the following:
  - Development of scope based on drawings and specs
  - Prioritizing equipment submittals procurement
  - Planning
  - Facilitating inputs/plan w/subs
  - Jobsite walks for status review
  - Updating the schedule
  - Analysis of status, delays and risks
  - Reporting and communicating the schedule to the project team
  - Fewer scheduling issues occur at the onset of the project
- The professional scheduler offers skills in planning and controlling that complement the PM's skills in managing the construction project.
- A professional scheduler takes back his responsibilities, easing the responsibility load of the PM and freeing up his time and focus for decision making.
- The fragmentation of the sector is alleviated by the professional scheduler's role of involving owner, management, stakeholders and subcontractors in the planning, scheduling and the schedule updating process.
- Project communications are improved through the efforts of the professional scheduler.

- A professional scheduler calls attention to areas of contractor incapability in a timely enough manner for the contractor to do what it takes to see the job is done right.
- A quality designed, developed and maintained schedule will support and add credibility for or against claims.
- The scheduler's quality work results in clarity of the most beneficial risk allocation of a contract for all parties.
- A professional scheduler is more likely to bring the lack of design information to the attention of the appropriate leaders in a timely manner. Schedule development includes designs, submittals, RFIs along with other project activities.
- A truly professional scheduler can catch contractual ambiguities during the schedule design process.
- Improved quality of work within the project due to better communications, collaboration, timely progress reports and schedule updates for better decision making and motivation.
- A higher percentage of projects delivered on time and within budget.

These benefits are worth any additional costs key project decision makers may balk at regarding the salary of the professional scheduler, or in the case of large complex projects, a team of professional schedulers. Such perceived costs were also partly responsible for the delegation of the scheduler's key responsibilities to the project manager, and the lesser scheduling duties given to the schedule data entry clerk, whose skills demand a significantly smaller pay rate. And, the results were proven to be costlier to the construction industry than maintaining well paid professional schedulers.

The decision to reinstate the full role of the professional scheduler back into the project team, with an extra boost of appreciation that had never been fully realized, should be an obvious one. So, to make the transition easier, here are three tips on how to leverage the talents and skills of the professional scheduler:

1. Define the qualifications and responsibilities of the position within the organization or for the project. Hire applicants according to their abilities and successful experience with meeting these requirements.
2. Invest in the training and mentoring of existing schedule data clerks to develop the needed skills and help them adapt to their additional responsibilities.
3. Partner with a third party that has the skills and reputation for providing professional schedulers.

## **Conclusion**

To call attention to the differences between the role of the professional scheduler as it was once regarded and the schedule data entry clerk as the role has predominantly become, the analogy

of the author versus the typist was used at the beginning of the paper. It conveys an easily understood, readily agreed upon connection with the written project, (which also parallels the schedule as a project).

Many aspects of the author parallel those of the professional scheduler. Aspects of the typist parallel those of the schedule data entry clerk. And these parallels were used to clarify the scope of each role.

The professional scheduler proved to be the author of the biography of the construction project, which is the schedule. An artist, inquisitor, researcher, problem solver, communicator, designer, and schedule data entry clerk, the professional scheduler has a unique skillset and perspective that assist with planning, schedule design, schedule development, coordinating key personnel for critical input into the plan and schedule, creating a baseline schedule that accurately represents the project's execution, tracking progress, updating the schedule and issuing reports to key decision makers and supporting the project manager with recommendations. The scheduler's additional responsibilities were listed.

The schedule data entry clerk's skills were shown to involve software proficiency, business communications, collaborative, and organizational abilities. This position is very useful when coordinated with the professional scheduler.

Once these roles were defined, the question of how the professional scheduler's role became diminished was addressed. A lack of proper priority was given to the schedule design and development by a significant portion of construction management leaders is one answer. Another is the lack of appreciation for the simplicity of CPM schedule. A third is the technological advances in software that created too many additional uses for the schedule and attractive reports that need less thought to be read.

This diminishing of the professional scheduler's position resulted in trouble for the construction industry. A myriad of challenges ranging from overburdened project managers to competing factions within projects continually plague construction projects, causing costly delays, budget overruns, poor quality of work, and expensive claims. Thirty percent of construction projects either run over budget or fail to complete on time. [5, p.1].

In response to these challenges, ten questions were presented to the reader as useful tools of evaluating the need for change in the planning, schedule design, schedule development process, including the upgrade of the scheduler's role.

Benefits were listed that should sway contractors, PMs and others in the construction industry to invest in the changes despite any biases toward the perceived cost of the upgrade. And, three tips were given to leverage the talents and skills of the professional scheduler.

An author has the power to inform and motivate readers, effecting change through his work, so, too, the professional scheduler. The professional scheduler generates the foundations of effective project planning, scheduling, communication, collaboration and controls, motivating the project team to quality work, timely completion and budget goals, simply by doing her job.

The hope in writing this paper is:

- To encourage the construction industry to embrace anew the role of the professional scheduler.
- To encourage professional schedulers to own their positions and mentor the next generations with the expertise and ethics required to maintain the integrity of the role.
- To encourage schedule data entry clerks to aspire to role of the professional scheduler or petition to work with professional schedulers to maximize the value of their own work.
- Ultimately, the hope is to initiate a positive change in the construction industry through the new acceptance of the professional scheduler's rightful place partnering with the project manager in common sense project management.

## References

1. The Constructor Civil Engineering Home, "Planning, Scheduling in Construction Management," <https://theconstructor.org/construction/planning-scheduling-and-construction-management/14/>
2. Devaux, Stephen A., *Total Project Control: A Manager's Guide to Integrated Project Planning, Measuring and Tracking*, Copyright 1999 Stephen, A. Devaux, John Wiley and Sons, Inc.
3. Chris Carson, PMP, PSP, DRMP, Pete Oaklander, Craig Relyea, PMI-Project Management Institute, *CPM Scheduling for Construction: Best Practices and Guidelines*, Copyright© 2014 Project Management Institute Inc. All rights reserved.
4. Woolf, Murray B., PMP, *Faster Construction Projects with CPM Scheduling*, Copyright© 2007 McGrawHill Companies. All rights reserved.
5. Paul Shamp, "2017 Scheduling Strategies for Construction Project Managers Toward On Time Delivery;" Walden University  
<http://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=5125&context=dissertations>