



Delay, Causal Reasoning and Counterfactual Worlds

What Would the Roman God 'Janus' Think?

Janus, the Roman god of time, could see into the past with one face and see the future with the other. Should we remember this in construction disputes?

Introduction

The philosopher Søren Kierkegaard (1813-55) once said: "Life can only be understood backwards; but it must be lived forwards." Ergo, it is full of uncertainties, some of which we may be aware of. In construction projects it has been known for project managers to adopt an overly optimistic attitude and, as a consequence, they fail to manage the possible consequences of these uncertainties.

Projects fail because risks, uncertainties and their consequential impact on the projects are not sufficiently considered. Many project managers forget that their parents taught them to 'look both ways before crossing the street'. 'Looking both ways' suggests an understanding of the future, an uncertain future, and being informed by the past.

In forensic delay analysis, the result of any assessment is based on the point-of-view of the analyst. There are generally two perspectives to deal with the delays, i.e. forward-looking and backward-looking. There has long been a dispute between these two camps. This article reviews these two perspectives and then proposes a new causal reasoning approach for matters associated with delays.

Within the forward-looking view (also referred to as the 'prospective forecasted mode',¹ or 'prospective'² view), we forecast the impact of the delays into the planned sequence of works, and often contemporaneously at the time the delays are occurring.

Within the backward-looking view (also referred to as 'retrospective actual mode',³ or 'retrospective'⁴ view), we are concerned with the as-built programme (or schedule) in which the activities are completed. We look at the events after the fact.

Prospective Vs Retrospective Reasoners

There has always been a debate on how to assess delay. The issue is made contentious as many tend to say that they have adopted a 'common sense' approach. Looking at the differences between the conclusions made by the delay analysts, appointed by both parties (i.e., claimant and defendant), the prudent person would conclude that there is no commonality in this approach. Just by saying that you're relying on 'common sense' in interpreting the facts can be flawed and misleading.

Those in the 'prospective' camp prefer to look at the events and the parties' state of mind 'at the time' and

simply ignore the as-built knowledge of subsequent events. Those in the ‘retrospective’ camp prefer to consider the as-built information (the so-called ‘facts’) and ignore the contemporaneous knowledge.

Now the argument gets inflammatory. One might argue that delay is a question of fact, or ‘why do I need to look in the crystal ball when I can read the book?’ Or one could argue that the analyst must consider all the facts; the as-built documentation is only one part of the fact.

We may have to also consider that in some instances the observations included in the final as-built programme should be given less weight when considering issues and delays early in the project timeline. It is irrational to state that contemporaneous knowledge and information are irrelevant when we have as-built knowledge.

Everyone may at least agree that the analysts using each of the above analysis methods look at the events from a different point of view (from different directions). Therefore, it is rational, logical, and sound to consider both prospective and retrospective methods in our analysis.

The critical path often changes throughout the project's lifetime and, in the retrospective method, the analyst may not consider this at each point during the project, meaning that he incorrectly sticks only with ‘the half fact’.

The Extreme and Non-Extreme Positions

It is important to highlight that the above may very well describe an extreme end of the spectrum. Good practitioners would not simply ignore the as-built knowledge, even if they prefer a prospective approach. Most are inevitably somewhere in the middle.

Most retrospective approaches take contemporaneous knowledge into account, although the relative weight of each source of information can vary. As a case in point, the collapsed as-built approaches give contemporaneous knowledge the least weight, but good practitioners of those methods do not wholly ignore this.

Within the Association for the Advancement of Cost Engineering International’s (AACE) ‘Recommended Practices’, the suggested methodology is defined by the project scenario and not the analyst’s choice. For example, the RP 29R-03⁵ formulation states that if the delays are largely in the past and the project is complete, the analyst is automatically in a retrospective position. The analyst may look back and use additive modelled

methods, but this is still considered a retrospective analysis, contrasted with the prospective analysis described in RP52R-06.⁶

All the techniques in RP 29R-03 are considered retrospective techniques based on the position of the analyst in time. According to the AACE International’s Recommended Practices, a prospective analysis is only done before the effects of a delay event are fully known. Everything else is modelling events and impacts that have already passed, even if the model itself positions itself as forward-looking.

Some with extreme positions may state them loudly and often, which may make it seem like there are only two opposing positions, but in reality, there is a continuum of nuanced positions, with most analysts somewhere between the extremes.

The Pattern Seekers

The analysts, as causal reasoners, might fall into the ‘chronology trap’, finding associations and assumed correlations and concluding that because event A happened before event B, event A was the cause of event B. This view, is a trap that analysts may fall into when considering a retrospective approach by merely looking at the as-built programme and finding an as-built critical path where such a path never existed. Correlation does not automatically imply causation.

The retrospective reasoners advocate that their approach using the as-built information and reasoning from effect to cause considers the whole facts. This should trigger alarm because, sometimes, the ‘facts’ can be wrong.

However, one main advantage of a retrospective method is that, under this type of reasoning, we consider the ‘alternative causes’ and do not limit our view to only the driving critical events (as opposed to reasoning from cause to effect in prospective reasoning). As noted above, within a retrospective reasoning, our brain performs a backward simulation to look at the events from effect to cause.

However, there is a danger that the analyst can easily and unconsciously look for the patterns, correlations, and critical paths while the reality could be completely different. The retrospective approach can leave many of the events unexplained.

Look Both Ways

The above discussions lead us to state that ‘counterfactual worlds’ exist within both prospective and retrospective causal reasoning. Under both methods, we run simulations and imagine ‘alternative worlds’ mentally by ‘cherry-picking’ the information. Both the prospective and retrospective methods present the information and facts to us in a distorted way. The ‘common sense trap’ can distort the facts if we do not rationally review the information. It is irrational and unwise to believe that a specific method is suitable just because many other analysts believe it to be good. This is the ‘bandwagon fallacy’ which many analysts fall into unconsciously. This fallacy gives the impression that ‘more is better’, and ‘popularity is good’. We should be careful of the dangers of ‘groupthink’.

It is the author’s view that we should consider a combination of forward and backward reasoning in our analyses. That is how we can act as a ‘rational observer’. The more perspectives we consider in our analyses, the better we can create a fuller version of reality. To do this, we need to take a bird's-eye view to look down at all the events and their inter-relationships along with a ‘worm’s eye view’ to consider the decisions made by the parties at the time, and hence notice their resulting causal sequence.

It is also important to review the programmes contemporaneously, chronologically, and cumulatively to understand the situation of the events in which the parties acted upon them at the time. Looking at the events prospectively and contemporaneously makes us aware that the project (and hence the events) runs forward, not backward. This can help us to understand that reality is more complicated and messier than as narrated in the as-built documentation.

To gain more confidence in our causal reasoning in both prospective and retrospective reasoning approaches, we need to test our causal model, meaning that when we intend to test whether event A causes event B, we need to manipulate the event A and then check the status of event B within our causal model (here we refer to the construction sequencing and logic within the programme). Doing this, we act as an ‘intervenor’ to test our causal model systematically.

One form of this intervention method is the ‘But-for’ test which assists us to develop a deeper understating of the causal relations by ‘systematically testing’ our hypothesis.

By applying ‘systematic testing’ we engage and intervene in the causal model rather than just observing the information. That is how we learn more about the causal models and the dominant cause of delays.

When carrying out any analysis, the analyst needs to always be conscious of any ‘hidden delays’ in the programmes which have been considered by the planners during the lifetime of the project. Masking the true impact of delays within a programme prevents us from correctly diagnosing the dominant causes of the delays.

Summary

In summary, it is the author’s opinion that the common understanding that a retrospective approach considers the ‘real world’, and the prospective approach reflects a ‘fictitious world’ is flawed and misleading. Good analysts should not have an extreme perspective, but rather sit somewhere along the spectrum. We must ‘look both ways’ and consider both prospective and retrospective causal reasoning to get closer to reality. We must be careful not to put the cart before the horse.

The Roman God Janus represented time because he could see into the past with one face and into the future with the other. Perhaps, indeed, our parents were following the Roman God Janus’ wisdom when advising us to ‘look both ways’ before crossing the street.

We can better understand the delays caused throughout the lifetime of a project by considering the application of combined prospective and retrospective reasoning methods while ‘systematically testing’ our causal models. This will allow us to learn more from the information.

This approach allows the analysts to discover a much clearer view of reality in delay analysis. Our duty is to find the closest possible world to reality and that is how an analyst as an expert witness can be most helpful to the tribunal.

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¹ AACE International, Recommended Practice No. 29R-03, Forensic Schedule, page 35, Latest revision

² Society of Construction Law Delay and Disruption Protocol, 2nd edition, 2017, page 34

³ AACE International, Recommended Practice No. 29R-03, Forensic Schedule, page 35, Latest revision

⁴ Society of Construction Law Delay and Disruption Protocol, 2nd edition, 2017, page 34

⁵ AACE International, Recommended Practice No. 29R-03, Forensic Schedule, Latest revision

⁶ AACE International, Recommended Practice No.52R-06: Prospective Time Impact Analysis – As Applied in Construction, May 4, 2017

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