# The Deadly Psychology of Schedules and Deadlines 

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Everyone has experience with projects that are late, and we have all heard the excuses and explanations - mostly true - from carpenters, architects, technicians, programmers, and engineers. In fact, missing project deadlines occurs so frequently that it is rarely a surprise. If we understood the psychology of scheduling, planning, and managing, would projects complete on time? The answer is definitely yes, but only if we consider three fundamental properties of human psychology: our unwillingness to contemplate the unknown, our inability to envision thousands of details, and our improved efficiency when deadlines are imminent. Project leaders study the technical details in schedules, but they seldom study the psychology of project schedules.

Consider a hypothetical project of some complexity. Its duration is proportional to the sum of the time required for completing each of hundreds, if not thousands of individual tasks. What does it mean to estimate the duration of every task? For tasks that are repeated frequently, we already have an appreciation for those factors that produce variations in completion time.

Consider just one task in a large project: splicing a cable. Some splices take 200 seconds to complete; some take 180, and some 320 . Using the data from hundreds of splices, we can construct a data table showing how frequently a splice is completed in a given amount of time. The extremes might range between 100 and 400 seconds, and the average time might be 284 seconds. The probability of a splice taking between 150 and 250 seconds might be $95 \%$. These are the statistical parameters for the task of one cable splice.

There is no single number for the time to splice a cable because there are always surprises and unknowns. Variations in time might arise from: an unplanned interruption by a colleague, a defect in the center conductor, or a headache after a big lunch. As an exercise, try listing all those surprises that could influence the time for completing a familiar task, even the trivial task of brushing your teeth. Without surprises, the time to splice a cable, or to brush your teeth, would be always constant and predictable.

For a large project like building a new studio, which is the composite of many individual tasks, the total completion time has dramatically larger variation. By assuming that all tasks have worst-case durations, a project might take as much as 24 months, and by assuming best-case durations, a project might take as little as 6 months. During my 40 -year career, I never met a leader who overestimated surprises. Although surprises are an everyday occurrence, they are rarely analyzed. Yet, the implications of surprises are unacceptable in projects where there are painful consequences for missing deadlines. Something has to give.

The easiest solution is to separate deadlines from the intrinsic variability in a project's duration. For example, a leader could select the project's goals such that the most likely duration was 30 months, while the actual deadline was 40 months. The extra 10 months becomes the padding margin for surprises. Using statistics, the leader might then compute that there is a $90 \%$ chance of meeting this deadline. But with a deadline of 30 months, there is only a $50 \%$ chance, and with a deadline of 20 months, there is only a $10 \%$ chance. Expectations determine lateness. With financial budgeting, we never plan to spend the last penny, and with time budgeting, we should never plan to need the last hour. If you want to reliably meet a deadline, add margin to the schedule-the project will always complete early.

This simple approach fails because it works against the natural psychology of fear as a source of motivation. Publish a schedule with 10 months of margin, and the staff is likely to take long lunch breaks, to arrive late after a relaxed breakfast, and to socialize when they should be working. Conversely, if the schedule shows that the project is modestly late before it begins, the staff is motivated by a sense of urgency to work diligently. Because efficiency improves with an immediate deadline, being late becomes a virtue, not an indication of failure. But if the project is hopelessly late, the staff gives up because there is no possibility of meeting the deadline. Some enlightened leaders use a hybrid approach: a public schedule without padding (to manage psychology), and a private schedule with padding (to manage reality).

There are other ways to compensate for surprises. Separate a project's requirements into an ordered list of priorities. In the example of the studio project, sort tasks into Phase 1 , containing only the minimal requirements to go on air, and Phase 2, containing those extra requirements that make the studio cosmetically complete. A studio is still functional without permanent lighting and dressed cables. Depending on when Phase 1 actually completes, some, all, or none of the requirements in Phase 2 can be completed before the deadline. The project may still be late, but the painful consequences of missing the deadline have been avoided. Using this approach, a leader compensates for surprises by dynamically adjusting how many low priority tasks will be completed.

One reaction to surprises, called thrashing, guarantees that a project will be very late. Thrashing occurs when the staff works hard, appears to be making progress, but the task never actually completes. This occurs if the requirements contain hidden contradictionsthere is no possible solution-or if quality expectations are unrealistically highperfection is the enemy of good enough. A thrash-detector should sound an alarm when a task is not approaching closure at a rate consistent with the effort being expended.

As an illustration of thrashing, consider the task of installing a cable between two studios. After installation, engineers discovered that it passed through a region with inordinately high power-line fields. The hum was an unacceptable -80 dB while the specification called for -100 dB . The cable was then re-installed along a $2^{\text {nd }}$ path, but excessive RF coupling produced other problems. Again, the cable was again re-installed, but the $3^{\text {rd }}$ path was obstructed by an impenetrable wall. Finally, a specialty cable was ordered, but it had an unknown delivery time. Repeated attempts to find the perfect cable
installation, which did not exist, produced thrashing: doing the same task multiple times. There are also examples of contradictory requirements, such as searching for a fullfeatured processor that is also small, simple, reliable, and inexpensive. One could look forever. Sometimes the remedy for thrashing involves making the task disappear, either because it is not really needed, or because there is a simple work-around.

Projects will complete on time if the leader has an appreciation for surprises. While the specifics of surprises can never be known beforehand, else they would not be surprises, an experienced leader anticipates their existence. He also recognizes the psychology of deadlines, pads the schedule with margins, sorts task priorities before beginning, and intervenes when tasks are thrashing. Together, these simple approaches work like magic for managing a schedule to meet a deadline.

