

# Why Corporate Leaders Hide Actual Time Available for Completion of Work- A Paradox in Time-Delay Management



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*The paper presents a scientific analysis of some frequently cited experiential sayings that are not yet verified and validated, still they attracted a widespread attention and gained notional acceptance. To quote, a few are: Pareto's 80-20 rule, Murphy's law and Parkinson's law. All these adages are pointer to a common issue in which 'time' takes the centre- stage. This is the reason why we have selected this problem to work on. To gather first- hand information on how people in general feel concerned about the importance of time allocation for the completion of work, a survey was conducted to elicit responses from the executives working in the government departments and also in different companies. The responses were found to be hovering over, " delay, of course, happens and there are too many reasons." The paper aims at to discover whether such ubiquitous narrative has empirical inconsistency or speaks of something deeper about the underlying fact. We discover this fact and present it in easily comprehensible independent variables - Energy and Time. A reductionist approach is adopted to break up the problem into two: one treats the problem at macro-scale and the other at micro-scale. The conceptual models are thus developed separately on the principles of classical mechanics and classical thermodynamics for macro world, and the principles of quantum mechanics -Heisenberg uncertainty principle- for the micro world. The integrated picture emerged from the two theoretical models maintains that an absolute efficiency to avoid wastage of energy in doing work, and to forecast the completion- time of a project with exactitude is a non-existent reality of this physical Universe. Business leaders believe that people are habituated to exceeding the time allocated for work, hence purposely shorten the time- line for the completion of work, and refrain from speaking out the truth to their managers. Irrespective of the disclosure of the available time span for things to do, the leaders are expected to make best use of time and get the work done which could be possible only by building and reposing trust in their executives and raising the level of collective consciousness.*

**Keywords:** Heisenberg Uncertainty Principle, Murphy Law, Pareto's Law, Parkinson's Law, Thermodynamics

## 1. Introduction

Time at our disposal is limited, because life that universe has gifted to us is limited. Since life is precious, time management is crucial and a must for all. Pareto's 80-20 rule for setting priorities at work looks like another version of time management. Murphy's law provides a shield to all evaders who can give any number of excuses but cannot fix the problems in time. And Parkinson's law - 'work expands to fill the time available for its completion' - is a sarcasm on those who are unable to manage time. If Time is relegated to back seat, it would fail all the plans and projects, and would also harm the financial health of a company. Business and busyness are the buzz words of our daily life. We seem to be running always short of time to complete a task-in-hand and the same time worrying for others in queue to do. Time is important in production management, materials management, logistics management and supply chain management. This way Time is central to all activities including the human activities- physical/physiological and mental. Many projects in the offing and many ongoing are unduly delayed for no apparent reasons, and cost of the projects sours high over a period of time. Still, no one is held responsible and no one feels accountable because the blame-game shields everyone.

Pareto's assertion (Koch, 2011) that 80% of wealth distribution in a country is in the hands of 20% of the people may not justify why 80% decisions in a meeting of the top management are taken in 20% time of the meeting, hence whether 80% time was a waste. The fact of the matter is that 80% of the meeting- time spent in brain storming session constituted the constructive phase of the meeting which facilitated decision -making in a short time. Using oppositional words concurrently in the same line, " Creativity is the residue of time wasted", Albert Einstein tries to emphasise that time invested in getting innovative results is not the time wasted.

Murphy's law (Bloch, 2011) - if anything can go wrong, it will - seems to be highlighting the mind-set of the people who are plagued with pessimistic outlook and / or fear- syndrome. If that is the case, the success is already half lost. Nature often translates perception into physical reality. This is also likely to happen with those whose skill and knowledge couldn't catch up with the leap of promotion to the position they got. Laurence J. Peter in his book, " The Peter Principle: Why Things Always Go Wrong", (Peter & Raymond 2014) puts it in different words, 'Employees keep getting promotion till they reach a level of

incompetence'. This only means that there is still a significant gap between what the responsible position requires of a person to be and what he/ she acquired till now to be.

Effort vs optimal time curve of Parkinson's law (Gough, 2011) tails off along the time axis because of the uncertainty in meeting the deadlines, but no light is thrown upon as to why such a stage should come, and how to manage it.

The common feature of all these statements, or the rules/ laws, expressed thematically in various forms is the issue seemingly of time management. But there is something more intrinsic about time we shall discuss soon. To make an authentic observation and complete the description of an event, three dimensional spatial coordinates are not adequate unless time is also considered as an additional dimension to specify the event. That is why Albert Einstein, the most popular and eminent scientist of 20th century put forth his visionary concept of 4- dimensional space-time continuum - a new unified physical reality to explore the fabric of vast universe netted with celestial bodies. Thus, no one in this real physical world in which we live can afford to be time-blind.

## 2. Need for Survey

To get first- hand information on how people perceive their quota of time to complete the work, a survey was conducted. The target group comprised executives (retired and in-service) working in government departments (state and centre) and managers working in small and large size companies. Our quest was intended to elicit responses to our questions revolving around the work (energy) and time relationship.

We had separate meetings with different groups of people and explained the purpose of our interaction. Since many of them were hesitant to reply to our queries regarding the top management's involvement in time management strategy, and interpersonal relationship of employees at the work place, the related questions and answers were expunged from the questionnaire and it was made short but the purpose of survey was fulfilled.

## Survey Outcome

The survey shows up that people are either reconciled with delay repeatedly happening or contented with criticising each other occasionally. Majority executives of government departments who already put in the service of more than 20 years - minimum service period to secure retirement benefits- were less concerned to the issue of delay in completion of work and their quick reply was, " See, these days work is so diversified that it needs remarks from many experts and information inputs from data custodians. And at times, there are technological glitches that technical man has to handle. Hence, delay is unavoidable." Some of them blurted out, " Top management is also partly responsible. They turn a deaf ear and don't move even a leaf when it comes to providing adequate resources". To our question, " Whether any criterion is fixed for prioritising the work", the answer was, " The only criterion is what our superiors want us to do first. We can collate and categorise back and forth accordingly." One should not be surprised to hear, " Nothing I keep pending at my end. I am not answerable for the delay ". Senior executives are often seen to be ready with stock reply, " We issue Instructions to the concerned department, and the in-charge looks into the issue. One has to wait ". The enquirer would seldom know which department the guy is referring to unless one probes it further at the risk of respondent's grimaces and irritation. All the responses were seen to have a tinge of 'passing the buck'. Since corporate management does not pledge job security, the responses of corporate executives were more or less similar but not casual; rather they were more guarded in terms of awareness and shared responsibility. Overall inference drawn from the survey was that delay in work by and large is a common feature.

Stress and anxiety are also the off-shoots of frequent delays in work completion and time mismanagement, which eventually dent deep into the well- being of the people. The brain (mind in common parlance) is the fountainhead of all mental and physical activities which together impact the self and the surrounding. There is no denial to the fact that compound effect of erratic and unregulated mental and physical activities adversely impact the mindfulness and wholesomeness of the people. The World Health Organisation (WHO Constitution, 1948) defines health as " a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". The WHO further modified the definition of health (Ottawa Charter, 1986) in a larger context as " a source for everyday life, not the object of living".

To discover the reasons and resolve the problem, a reductionist approach is adopted; we break the problem into two domains, one linked to the classical aspect at macro-scale and the other linked to the quantum aspect at micro-scale. We then investigate how human physiology works like a thermodynamic machine, and how human mind works like a quantum machine in all the mental processes.

## 3. Classical Perspective- Energy, Power and Work

All activities that humans do happen at the expense of energy depending upon the nature and duration of activities. Energy consumed in physical and physiological activities, and the rate of doing work are directly measurable macroscopic parameters, hence rules of classical physics / Newtonian mechanics are fit to apply and analyse how energy, work and time are related to each other.

The difference between the energy  $E_i$  of a system at the start of the activity and its energy  $E_f$  at the finish of the activity is the energy consumed in the work done ( $W$ ), i.e.,  $E_i - E_f = W$ . If the work  $W$  is to be done in time  $t$ , then the rate of doing work (power  $P$ ) is the rate of loss of energy which is given by  $P = W / t$ .

The inverse relationship between the power and time shall obviously mean that if, for a given amount of work, power is under-utilised or trips from the required level, the time to finish the activity is going to extend, and vice versa.

### 3.1 Thermodynamic Perspective

The most amazing thermodynamic system on the planet is human body. It is analogous to a heat engine or a working machine, the basis of which is the second law of thermodynamics.

The simple interpretation of the law given by Kelvin and Planck is that no heat engine can completely convert its full energy-input to the useful work because there is always some unavoidable wastage (Klein,2018; Hill,2012). Even the Universe in which most processes are spontaneous has tendency to deteriorate over a period of time. Brian Greene, professor of Physics and Mathematics at Columbia university, New York, explains Second Law of Thermodynamics in crisp and colloquial words (Greene, 2021)," The law reveals that everything in the universe has overwhelming tendency to run down, to degrade and to wither."

### 3.2 Quantum Perspective

Quantum mind is an emerging field (Mindell, 2012) which uses rules of quantum mechanics to explain human psychology and behaviour. Let us first focus on the existing information on bio-numbers taken from the neuroscience database, (Queensland Brain Institute 2019; Byrne John, 2021, HMS- Harvard,2010, NCBI).

There are about 100 billion neurons in human brain and more than 100 trillion neuronal junctions (synapses); Action potential peak is around +40 millivolt; Action potential frequency is 200-300 Hertz; speed of electric impulse/ discharge current ~100 meter per second; synaptic gap is ~ 20 nano-meter and transit time of electric impulse to cross synaptic gap is 0.5 to 1.0 nanosecond; neurotransmitter size is 0.5 to 5 nano-meters. The neuronal transmission happens in nano seconds in nano-meter dimension of the neural body across the neuronal pathways. Our quantum mechanical model thus treats electric impulses fired from the neuronal cells as quanta of cognitive energy - the wave packets of encoded information spreading out as discharge currents across the synaptic gaps. Traveling brain waves are understood to be playing a critical role in cognition (Makin,2018).

It is, therefore, rational to apply the concepts of quantum mechanics- Heisenberg uncertainty principle- to study how energy in the wave packets should have been paired with the time during neurotransmission.

Heisenberg's Uncertainty principle (Martin 2013; Lindley, 2008) is a fundamental principle of Quantum mechanics (Feynman et al., 2008; Wichmann, 2017; Bohm,1989). It is expressed in different mathematical forms of inequalities. One form of Heisenberg Uncertainty principle for the simultaneously measured values of complementary variables -Energy and Time- of a quantum object is expressed in the following:

$$dE \times dt > \text{or} = h / 4 \pi$$

Where  $dE$  and  $dt$  are the magnitudes of uncertainties involved in the measurement of energy and time respectively;  $h$  is Planck's constant ( $= 6.626 \times 10^{-34}$  Joule. second), and the value of  $\pi = 3.1415$ .

As the product of uncertainties is of the order of Planck's constant, it is minuscule for a single wave packet. But when billions of electric impulses are fired in less than a millisecond, the quantity swells up and sets a fundamental limit to the accuracy of measurement. Further, the inverse relationship between them indicates that any fractional decrease (negative drift) in the value of one variable would cause similar fractional increase (positive drift) in the value of the other variable and vice versa.

## 4. Discussion

Energy is expended in all sorts of activities- physical/physiological and mental. Newtonian mechanics guides that when energy of a system decreases, the rate of doing work also decreases, and eventually the time for the completion of work extends and supersedes the limit of allocated time. Thermodynamically, the total fuel energy of an engine cannot be completely converted into useful external work because there is always some unavoidable wastage of energy. This results in the process diminution of total energy- input available at the start of the activity. Another fact is that all isolated systems have natural tendency to drift into a less orderly state which has lower energy, but thermodynamically it is more stable and probabilistically more favourable. Hence, a system in action suffers cumulative wastage of energy as the time passes. All these illustrations saliently indicate that time for work- completion estimated on the basis of initial energy input is going to increase, considering all other conditions as normal.

There is also a psychological aspect involved in the loss of energy which needs to be managed. In a Harvard study, 'Wandering mind not a happy mind', psychologists Mathew A. Killingsworth and Daniel T. Gilbert say that about 47% of waking hours are spent thinking about what is not going on - something other than what people are doing (Killingsworth & Gilbert, 2010/11). Such thoughts might be erratic, random and unproductive which one finds difficult to stop. The 47% loss of cognitive energy is huge, and this affects the efficiency of brain. Because of this, either the quality of work would have to be compromised or the completion time needs to be extended. We fail to realise that such random thoughts are whittling away our cognitive energy and seriously interfering with our cognitive engagement. Eventually, the cognitive energy needed for useful cognitive engagement at the quantum level is going to decrease which is an additional cause of increase in time for the completion of work. However, this loss can be made up to a great extent by putting in conscious efforts. But the inherent problem lies elsewhere: that comes from the uncertainty in the simultaneously measured values of time and energy at the microlevel of cognitive process, and the unavoidable wastage of energy at the macrolevel in physical and physiological activities. The cause of uncertainty in time at the microlevel shall manifest itself when contribution from billions of electric impulses fired every

millisecond is taken into account. In tandem, the unavoidable loss of energy not contributing to performing the useful work at macrolevel shall also show up in the extension of time. The compound effect, therefore, is that time gets inadvertently extended. The loss of energy due to strenuous and long physical activity can be minimised by changing the physical conditions and environment, but drop/decrease in energy due to unproductive thoughts randomly streaming through the mind calls for self-awareness and self-management. It is possible if and only if efforts are made honestly and consciously. Each individual needs to nurture self-awareness with positive perception and strive for evoking self-consciousness. Otherwise, even revised deadlines would hardly be met, blame game would never end, buck would never stop and basket of excuses would never exhaust. Collective consciousness is quintessential to give epistemological meaning to our being conscious and being a member of a conscientious group of awakened people.

## 5. Conclusion

We studied work-time relationship by having compared human body with a working machine which obeys Newtonian mechanics, and also follows the laws of thermodynamics. And to analyse why uncertainty prevails in the estimated time for a cognitive process, we envisaged a quantum model of human brain. In the neural network, billions of neuronal cells fire electric impulses in a millisecond, which spread out as discharge currents carrying encoded information across all parts of the body. In our quantum model, these impulses are treated as quanta (wave packets) of cognitive energy, hence Heisenberg uncertainty principle is explored to find out the fundamental limits of accuracy in the simultaneously measured values of time and energy of the wave-packets of cognitive energy in transition.

The thermodynamic model shows that there is always an unavoidable wastage of energy over and above its consumption in the useful work, which causes unavoidable drop in the total energy of the system. As a result, the extension of initially estimated and allocated time for the completion of work is natural. Quantum model also reveals that an amount of uncertainty in the simultaneously measured values of both energy and time of a quantum object is intrinsic and an inverse relationship exists between them: if energy drops or suffers dispersion, the associated time would dilate.

Both the models independently lead to the same result, and affirm that in all physical/ physiological and mental activities, there is an inevitable wastage of energy, and a certain amount of inherent uncertainty in the precise measurement of energy and time. Therefore, the perceived time for the completion of a given volume of work would always extend, and it is the reality of this physical universe. The answer to the question, 'how much extension of time is going to happen' would always remain obscured. The only possible answer could be: longer the estimated duration of the activity, higher are the chances of delay and uncertainty in the completion of work. This is why without even knowing the mystery of the delay in the completion of work, business leaders just by hunch keep provision for the limited extension of time. What also surfaces here is a valuable learning for the leadership: expecting human resource to take absolute control of time is a non-existent reality of the physical universe. Thus, the end result of this piece of research work is key to human resource management / development. Corporate leadership should make best use of the human resource by giving them training, retraining and making appeal rather than blaming and treating them just as a replaceable part of a machine just because they could not catch-up with the schedule on dot.

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