

A Prelude to Algorithmic Management.

Tariq Khan
Department of Economics
University of Nebraska at Omaha,
Omaha, Nebraska, USA

It may be desirable to explain, that by the word operation, we mean any process which alters the mutual relation of two or more things, be this relation of what kind it may. This is the most general definition, and would include all subjects in the universe.

--Ada Lovelace

We have good corporals and good sergeants and some good lieutenants and captains, and those are far more important than good generals.

--William Tecumseh Sherman

Accountability: obligation or willingness to accept responsibility or to account for one's actions.

Gate: to establish, control, police, adjust intake rate of.

Much of modern history involves attempts to formalize the various disciplines of activity in the natural world and in human life. While great progress has been made in the physical sciences, the social sciences, including in this context economics and management, are in their infancy by comparison. None the less, economics has made progress in an attempt to gain solid empirical foundations and with the vast majority of the world's population involved in management in one form or another via employment and associated organizational and power structures, research into optimal management practices could be considered to have the largest available data sets of any science. Yet it is the very opposite that is the case as there is such a variety of social, cultural, and political differences in any given country, society, organization, or workplace that attempts to establish a perfect management framework have seemed impossible. But progress has been made here as well and in a modern world where every process and activity is now being analyzed under the context of workflow formalism, ultimately in an effort toward automation and orchestration of workloads, even management practices are being examined in the context of establishing formal foundations. It in this context that we seek to define the beginnings of a sort of algorithmic based management where the true critical functions are defined with the ultimate goal of creating teams that perform at their highest with work getting completed.

Before we list the key functions of management beginning with the leadership level, let us define the problem which here is the problem of work distribution in an organization that lacks accountability or "gating."

Leadership Responsibilities

The primary function of leadership is in holding an organization, a team, individuals, and themselves accountable. The best term to describe this function is the term "gate" where gating is defined as the establishing control, policing, and adjusting the intake rates of, in this case, work. Without an environment of ACCOUNTABILITY it is impossible to have a productive workplace. Without accountability every other action is at worst meaningless and at best farce.

Beyond the absolute foundation of accountability, leadership must also perform a few other key duties. Those would include direction in the sense of INSPIRATION and also oversight. While the better angels of human nature have demonstrated great nobility and altruism in much of history, it is far from the case given a team of individuals with the freedom to "do as they please." Without the inspiration to motivate and "corral" individuals into a common cause there is the literal risk of even the most ethical and honorable of employees simply pursuing their self-interests over that of the team's whether it be studying for a certification, focusing on resume building work, or even exercising instead of working with their peers in a common goal.

Beyond the existential responsibilities of accountability and inspiration leadership must 1) identify clear targets or GOALS and then 2) clearly define individual and team ROLES AND RESPONSIBILITIES often done via a formal ORG CHART so that resources can be aligned optimally to achieve those goals. A tremendous number of leaders and organizations fail at these primary functions at the peril of their very existence.

Now let us breakout the additional duties of leadership and management:

- Leadership must gate CULTURE – leadership sets the culture of the organization via example including ETHICS, or the lack thereof, policies, the choice of priorities (how projects are ranked), and communication.
- Leadership must gate BEHAVIORS – leadership must control behaviors via incentivization or rewards including resources (funding, staffing, recognition, promotions) and via discipline (including the enforcement of penalties in fair and equitable means and establishing and enforcing of PROCESS). If leadership fails to gate CULTURE and BEHAVIORS then staff may:
 - Ignore communications to avoid work.
 - Ignore meetings to avoid work.
 - Avoid ownership of work by “dumping” responsibilities on other teams or individuals.
 - Do too often what is “easy” versus what is “right.”
 - Avoid work via “Identity Drift” - Lack of awareness (lack of an understanding of comparative workloads or priorities or the overall financial health of a company or risk or staffing levels) leads some individuals to “up-value” their level of contribution or role (i.e. too many feel they are the “busiest in the org” and thus too many staff start to act like a “chief” or executive attempting to provide strategy and direction but no direct work or ownership which is appropriate to the actual role they are paid to perform).
- Leadership must gate OPERATIONAL REALITY - via communicating the “state” of the company, current and future staff counts and project counts, policies, performance expectations, examples of top behaviors, goals and areas of focus, and establish and measure KPIs/OKRs.
- Leadership must gate the ALLOCATION OF RESOURCES – via distribution of money (budgets) and alignment of staff (org charts with clearly defined “roles and responsibilities”) to align with the business priorities or goals. Money (funding) can have a direct impact on the quality of talent, morale of talent, amount of talent, training, and thus total available time to complete any work task.

Management Responsibilities

The responsibilities of direct management (middle management levels at times from the Vice President level and below but primarily Supervisor, Manager, and Director positions) is similar to leadership responsibilities but in many ways is very different:

Direct Management must gate ACCESS to a team’s staff and time resources (prioritize work and control the intake load and intake rate)

Direct Management must gate INPUTS OF WORK (project work, task work, the number of inputs or possible interruptions) – via email, request, chat, discussion, call, meeting, incident, spark/teams, idea, etc...

Example

One way to see how issues arise when there is a lack of gating in the workplace is to examine a specific example Scenario of an individual’s work decision logic:

Decision 1: *Do I own this work or not?*

Possible options for action:

- A = own (perform, assist, learn, plan, coordinate, design, build, audit, communicate).
- B = delegate, assign, "dump" (go to decision 2 below).
- C = ignore (do nothing).
- D = queue (push into the future, i.e. "wait").

Possible factors influencing the person's decision:

- 1) Culture - in a culture that lacks accountability, *"I really don't have to own this"*.
- 2) Biology - genetic and learned tendencies in a given individual to be ethical, a workaholic, empathy-driven to help their peers (guilt of not helping those in need), overall ability (health), *"I should own this."*
- 3) Are there defined "roles and responsibilities" that clearly indicate this as a task I own and I am held accountable for? *"I need to own this."*
- 4) Do I have the necessary resources – the skill, intelligence (too complex), experience, help, time, safety from interruption, political ability to get things done, etc...? *"I can own this."*
- 5) Am I too busy or dealing with too many interruptions? *"I can't possibly own this too."*
- 6) Do I have the temperament to own this versus am I overstressed or overloaded - lack of Direct Management gating? *"I am not going to own this."*

Decision 2: (from option B above) - If I delegate this work, then how do I find the owner of the work to delegate it to?

- 1) Does a process exist? (*this is the proper procedure*).
- 2) Is an owner capable of being deduced from the org chart? (*this is also a proper procedure*) If no, then "roles and responsibilities" are "nebulous." However, nebulous "roles and responsibilities" create an additional dependency then on ethics (for individuals to make the "right" decision) that is dependent on culture that is established by leadership.
- 3) Who helped me in the past? (*an easy way out*).
- 4) Who is reachable? (who is on chat, responds to email, responds to Spark/Teams, is in the office, is in their cube) (*an easy way out*).
- 5) Who helped me in the past (*an easy way, aka "the cow-path"*).
- 6) Who has done this or other projects successfully in the past (*give to those who "actually care" or care enough to stick with a task until completion*)?

Note that the optimization of any business involves a constant attempt to balance the constraints of scarcity and the "law of the iron triangle" (where only two of three vertices of the triangle can ever be done at the same time where the vertices represent in general speed, quality, and cost with the excluded "vertex" thus impacted by the choice of the other two (i.e. a project done fast and with high quality is expensive or a project done cheap but with very high quality will take an excess amount of time, etc...)

Now we encounter "the problem" as in any organization that lacks proper leadership gating actions, we can see from the example above how by a logical "plinko game" downward decision step flow, EXCESS WORK will hit teams or individuals that are reachable, that are the first point-of-contact, and that "care" or participate (i.e. our leadership management team are now inadvertently "rewarding the lazy"). Thus, we see a result that is the distribution of excess or random work (essentially a situation that is consider

unfair) to specific staff or teams (often in operational or frontline roles) that is, at the same time, still the result of logical decision behaviors by any given single individual as seen in the example above.

But this distribution of excess work can lead to individual and team overload which can produce a DEFLATIONARY SPIRAL effect as some of the overloaded top performers then become burned-out and leave the organization thus reducing the size of the total pool of top performers which then increases the amount of excess work on those performers that remain. The catastrophe is that this problem results in the increasing loss of high-quality talent while increasing the percentage of talent that avoids work until ultimately the impact to productivity is so severe that a re-org, change in leadership, fundamental change in alignment, or sale or failure of the company occurs. Thus, to avoid encountering “the problem,” of this unfair or unequitable distribution of work, proper gating activities must occur at the management and leadership levels in an organization.

Checklist

So to review or summarize again the key steps that leadership must perform to prevent the aforementioned problems here are the steps Leadership must always take:

1. Hold individuals, leaders, staff, the company, and themselves accountable.
2. Inspire staff in the vision and oversee them to create a team not a group of individuals.
3. Create clearly defined and achievable goals and communicate them to everyone.
4. Create logical and functional org charts.
5. Clearly define owners of work and the flow-of-work (roles and responsibilities).
6. Establish and embody the right culture. Next to accountability culture is everything.
7. Enforce discipline and penalties (do not reward the lazy).
8. Prevent or gate the “sedimentation” of work to lower levels that are powerless.
9. Prevent environments that lack follow-through (destroys trust out of hypocrisy).
10. Avoid environments that promote a culture of fear as it leads to blame and then even more anxiety.
11. Gate gossip and repeated lies as, via repetition, they are often believed to be true, i.e. myth becomes legend.

Psychology

These fundamental tasks of leadership are especially important in a “time of high anxiety,” i.e. staff are anxious about their long-term job security or who they work for or risks of blame and termination. Two famous psychological traits (basically ethical problems) that arise especially in times of flux and anxiety include:

1. “The Elitist problem”: unethical individuals will self-justify doing less work, dumping work on others, working two separate jobs at the same time, lying, stealing, abuse of others, superiority to others etc....

The Fundamental Problem of Politics: Henry Kissinger famous quote, formally, “the most fundamental problem of politics, is not the control of wickedness, but the limitation of righteousness.” The Nazis, the Jacobins, the ayatollahs, and the others who have made revolutions, have all been self-righteous. Nothing is more dangerous than people convinced of their moral superiority, since they deny their political opponents that very attribute. Tyranny, a form of disorder posing as order, is the result.”

2. “The Statesman Problem”: almost every individual will avoid taking risky action if they fear for their jobs if they can always simply come in later and even get rewarded for “putting out the fire”

at the later time. Individuals choose to wait rather than decide or ignore or obfuscate ownership or decisions.

The Statesman Problem: famous political science thought problem, formally, "Each political leader has the choice between making the assessment which requires the least effort or making an assessment which requires more effort. If he makes the assessment that requires least effort, then as time goes on it may turn out that he was wrong and then he will have to pay a heavy price. If he acts on the basis of a guess, he will never be able to prove that his effort was necessary, but he may save himself a great deal of grief later on... If he acts early, he cannot know whether it was necessary. If he waits, he may be lucky or he may be unlucky."...The key point about the problem of conjecture is in the asymmetry of the payoffs. A successful preemptive action is not rewarded in proportion to its benefits because... "it is in the nature of successful policies that posterity forgets how easily things might have been otherwise." The preemptive statesman is more likely to be condemned for the up-front costs of preemption than to be praised for averting calamity. By contrast, playing for time... is not certain to lead to disaster."

When either of these problems occur, they lead to "work that is ignored" or work that has no formal owner. This leads to a situation where "no one will pick-up the football" when there is critical work that is needed but no one is forced or defined to own it. A similar problem is if there is "work that is very complex" then it is often avoided outright and can lead to a situation seen in various literature where the operations of a complex system are usually dependent on only a very small number of employees who are critical to the successful operation of that systems and if they make a mistake or leave then the system has a high risk of collapse.

Recent research has also examined how employees that are overloaded both intentionally and unintentionally will avoid excess work, especially early in the day, in order to attempt to preserve norepinephrine to literally save mental brainpower.

Finally, understand that often decisions made in any organization are still based on inputs from humans and humans, akin to Maslow's hierarchy, act based on a hierarchy of decision factors where ultimately higher levels can override logic from levels below them. Consider how a company President may never purchase a product from a specific vendor. It may be the simplest or most logical choice, it may be the cheapest choice, it may even make the most sense for the best of the company and team, but if that President has a Philosophical belief or reason to not make that choice it is this factor that overrides the others. Ultimately humans can be victim to their biological factors as well including fatigue, sobriety, anger, etc... that if known may explain decision making that seems to not be logical or moral.

List of human decision-making factors (ranked from bottom to top):

1. Biological
2. Psychological
3. Philosophical
4. Moral/Ethical
5. Financial
6. Logistical