Viewpoint: Lean does not need another waste list. A practitioner-scholar argument for classifying mechanisms before removing resources

Why another list is the wrong future

Lean teaches people to see waste. The familiar seven wastes make that instruction concrete: overproduction, waiting, transportation, overprocessing, inventory, motion and defects. Later lists add unused creativity, environmental harm, information, space, complexity and industry-specific losses. These additions often help a team notice what its current vocabulary overlooks. The difficulty begins when an observation label becomes a verdict.

The items in these lists are not equivalent kinds of things. Some are quantities, some are activities, some are conditions and some are outcomes. Inventory may be surplus stock, a justified buffer against specified variability or an option that preserves a response to a rare state. Waiting may reveal poor coordination, but a pause may also protect safety, reflection or learning. Inspection consumes resources without transforming the product, yet it can detect defects and return information to the process that created them. The noun alone does not identify the mechanism or prescribe the remedy.

This distinction is not academic ornament. Before entering academic life, I held managerial positions in five countries, including at Toyota and later consulted on Lean systems. In practice, the cost of a visible resource is easy to count. The function that resource protects is often visible only after removal. A waste vocabulary that directs attention without disciplining judgment can therefore turn lean into ordinary cost cutting.

Research and expert viewpoints have already shown that Lean is an integrated socio-technical system, not a loose tool kit and that familiar waste concepts can contradict one another (Bhasin, 2011; Åhlström *et al.*, 2021; Shah and Ward, 2003, 2007; Thürer *et al.*, 2017). Other scholars have warned that excessive resource reduction can weaken resilience or simply rename general operational excellence as Lean (Hopp and Spearman, 2021; Browning and de Treville, 2021). The next advance should not be an eighth, ninth or twenty-eighth waste. It should be a better account of how loss is generated.

Classify the mechanism, not the object

A practical definition is needed before classification. Waste is an avoidable net loss relative to a feasible better way of operating, judged across the functions, people, operating states and time horizon that materially define the decision. Net matters because a resource can impose a direct cost while also performing detection, coordination, learning, protection or option functions. Feasible matters because an ideal state may require redesign before a current resource can be removed. Evidence from manufacturing research and development likewise shows that waste can be reduced while technical rigor and stakeholder satisfaction are deliberately protected (Panat *et al.*, 2014).

Four mechanisms cover the operational question more cleanly than an open-ended list. They are mechanisms rather than visible objects and their names should remain stable across industries.

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Excess: more is present than the functions require

Excess exists when a marginal unit of material, activity, output, precision, frequency or capacity can be absent from the better configuration while relevant functions are preserved. Overproduction is usually excess. Inventory is excess only after its buffer, learning and option functions have been examined. The characteristic response is reduction or simplification, sometimes after redesign.

Omission: a necessary function is missing

Omission exists when a required contribution, capability, signal, action or control is absent or below its functional threshold. Unused employee knowledge can be an omission when a feasible contribution is neither elicited nor developed. Removing inspection before the process can detect and prevent its own defects and may create an omission even if inspection remains non-value-adding relative to an ideal process.

Mismatch: present elements do not fit

Mismatch exists when resources, information, activities or outputs are present but do not fit the requirement in quality, form, timing, place, sequence or assignment. A defective weld is a mismatch. So is automation that cannot accommodate the product variety it was purchased to handle. The response is correction, synchronization, relocation, redesign or reassignment, not simple deletion.

Displacement: the apparent gain moves the burden

Displacement exists when an intervention appears to reduce waste inside a narrow boundary by moving work, inventory, delay, risk or harm to another included actor, unit, operating state or period. A plant may lower its reported stock while requiring a supplier to carry more. A cost center may reduce labor while recruitment and ramp-up costs appear later in another budget. The local saving is real, but it is not a system gain.

An episode may contain several linked losses. The discipline is to name the first mechanism that creates net loss at each decision-relevant link, then trace later conversions separately. Removing inspectors, for example, may reduce an existing excess of inspection effort but create an omission of detection and learning. The later defect is not evidence that all inspection was valuable. It is evidence that the intervention failed to preserve a necessary function.

Waste status is not removal readiness

Lean should retain its demanding judgment that necessary non-value-adding work is still waste relative to an ideal capable process. Calling inspection necessary does not transform it into customer value. Yet the conclusion that inspection is waste does not establish that it can be removed today. Two judgments have been collapsed for too long.

Waste status asks whether the current configuration contains an avoidable net loss relative to a feasible better configuration. Removal readiness asks whether every necessary secondary function and sensing pathway has disappeared or been replaced. A known waste becomes removal-ready only when those functions are demonstrably protected. If either judgment remains unclear, the prudent action is to retain the resource temporarily, improve the evidence and design a reversible test.

This rule does not defend slack without limit. It changes the burden of proof. Visible resource costs should not automatically outrank counterfactual functions whose value appears through defects that do not escape, disruptions that do not occur or options that are

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not exercised. Capability traps arise precisely when pressure for current output crowds out investment in process capability and then makes the resulting weakness appear to justify still more pressure (Repenning and Sterman, 2002).

The future of lean requires better judgment

Digital operations make this problem more urgent. Dashboards can make labor minutes, inventory and idle capacity continuously visible while leaving prevention, resilience and transferred burden comparatively obscure. Artificial intelligence can recommend removal at a speed that outruns local knowledge. Recent research in the International Journal of Lean Six Sigma places shop-floor employees at the center of Lean automation and identifies a continuing need to understand practitioner experience in digitally enabled improvement (Soriano Lopez, 2026; Torno, 2026). A future-facing Lean system must therefore improve the quality of classification before it accelerates intervention.

The required infrastructure is social as well as analytical. People close to the work know task conditions. Engineers know design limits. Quality personnel see defect patterns. Suppliers and customers may observe transferred consequences. Respect for people is therefore part of the information system through which waste is classified. Protected voice, training, job rotation and problem-solving participation expand the evidence available to a decision; work published in the journal similarly shows that hard and soft Lean practices must interact over time (Gaiardelli *et al.*, 2019). Expertise still matters; participation does not mean that every opinion carries equal technical weight. It means that claims can be challenged by relevant knowledge and reopened when evidence changes.

Governance should also rise with consequence. Most small improvements should proceed through rapid observation and learning. Changes that are difficult to reverse, hard to monitor or capable of moving serious risk require wider consultation, temporary countermeasures and explicit rollback triggers. Standardized work, Jidoka and Kaizen remain valuable because they make abnormalities visible and decisions testable, not because they eliminate human judgment (Spear and Bowen, 1999).

A seven-step field discipline

A manager or improvement team can apply the mechanism view without replacing the local language that helps people see problems. Before acting on a waste label:

- State the decision scope: material functions, stakeholders, operating states and time horizon.
- Describe the loss without using a waste label.
- List the present resource’s secondary functions, including detection, coordination, learning, protection and option value.
- Classify the first mechanism as excess, omission, mismatch or displacement. Record unresolved rivals instead of forcing certainty.
- Match the countermeasure to the mechanism: reduce excess, add omission, reconfigure mismatch or rebalance displacement.
- Test removal readiness separately and protect every necessary function.
- Monitor deviations, consult affected stakeholders and reopen the decision when the evidence changes.

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The opinion in one sentence

Lean does not need another waste list. It needs a disciplined way to decide whether the observed loss comes from surplus presence, a missing function, a poor fit or a transferred burden, followed by a separate judgment about whether removal is safe. That language preserves lean's insistence on improvement while making indiscriminate deletion harder to disguise as lean.

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