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Digital Taylorism and the Erosion of Professional Judgment

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Abstract

Digital systems translate knowledge work into data fields, modular tasks, recommendations, rankings, and auditable events. These arrangements can improve coordination and consistency, yet they may also relocate decision authority, reduce exposure to whole-task learning, and make professional responsibility dependent on procedures whose assumptions are difficult to inspect. This Critical Viewpoint Article argues that the problem is not a simple restoration of classical Taylorism, but a conditional recombination of standardization, adaptive computation, metric visibility, and distributed accountability. It develops the proposed Expertise–Discretion Preservation Architecture, connecting four risk domains: digital standardization and task decomposition, skill narrowing and procedural dependency, metric control and professional judgment, and organizational consequences of deskilling. The central mechanism is a cross-level capability pathway: when decomposition restricts learning exposure, opacity redistributes knowledge, and metrics acquire authority without corresponding accountability, local efficiency may coexist with weakened capacities to diagnose, challenge, recover, and improve work systems. The article advances four normative decision principles: capability continuity, bounded delegation, consequential contestability, and accountable authority. These principles are not presented as a validated causal model, universal prescription, or implementation-ready framework. Alternative explanations include augmentation, improved consistency, worker adaptation, task fit, and occupationally specific enactment. Testing requires longitudinal, comparative, and multilevel research that separates formal system design from enacted practice, individual experience from organizational outcomes, and technological capability from legitimate authority. The contribution is a bounded vocabulary and governance-oriented synthesis for examining when digital coordination supports expertise and when it may progressively hollow it out.

Keywords: Digital standardization and task decomposition, Skill narrowing and procedural dependency, Metric control and professional judgment, Organizational consequences of deskilling, Erosion, Professional

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Introduction

Algorithmic systems can direct activity, evaluate conduct, and discipline workers through recommendations, records, ratings, rewards, and replacement threats, thereby extending managerial control into the technical infrastructure of everyday work [1]. Learning algorithms complicate this terrain because their outputs can be adaptive, probabilistic, and opaque, altering not only task execution but also how expertise is produced, recognized, and organized [2]. The resulting problem exceeds familiar concerns about automation replacing jobs. In knowledge work, digital systems may influence which cues professionals notice, which steps they perform, which exceptions become visible, and which accounts are accepted as legitimate. Professional judgment is therefore at risk not only when a person is formally overruled, but when the conditions for developing, exercising, and defending judgment are gradually reorganized.

A deterministic return-to-Taylorism thesis is nevertheless insufficient. Automation and augmentation are mutually implicated: systems introduced to assist judgment can generate new automation, while automation can create new demands for human interpretation, repair, and exception handling [3]. Effects also differ across individual, team, occupational, and organizational levels, making it unsafe to infer collective capability from a worker's reported autonomy or to infer organizational performance from local adoption [4]. Digital Taylorism should therefore be treated as a contingent organizational tendency rather than a universal technological essence. Its contemporary form lies in the recombination of task decomposition, continuous data capture, predictive evaluation, and distributed authority. These features may strengthen managerial visibility while leaving responsibility ambiguous, but their consequences depend on design, implementation, occupational norms, employment relations, and opportunities for worker influence.

Algorithmic management can redesign jobs through monitoring, scheduling, goal setting, performance management, and compensation, changing both demands and resources rather than merely adding a neutral tool [5]. Available synthesis likewise indicates that algorithmic management may intensify Taylorist control or support autonomy according to its configuration and context [6]. This dual possibility matters because standardization can remove avoidable variation, make coordination safer, or release professionals from routine burdens. Yet the same architecture can narrow the range of practiced tasks, transform advice into an implicit command, or transfer accountability to workers who lack meaningful authority to question the system. The critical issue is not whether metrics, workflows, or algorithms exist, but how they structure participation, learning, decision rights, and responsibility over time.

This article advances a Critical Viewpoint rather than an empirical test, systematic review, or managerial guideline. It asks how digital standardization and task decomposition can become linked to skill narrowing and procedural dependency; how metric control can shape professional judgment without wholly determining it; and how these processes may accumulate into organizational capability fragility. Established findings are used to delimit plausible mechanisms and counterarguments. The article's cross-domain relationships, by contrast, are explicitly proposed as an original synthesis. "Erosion" denotes a temporal risk of diminishing conditions for competent discretion, not a demonstrated decline in every worker, occupation, or organization. "Professional" refers to work requiring context-sensitive interpretation, accountable expertise, and decisions that cannot be exhausted by codified rules, rather than to status privilege or immunity from scrutiny.

The principal proposed contribution is the Expertise–Discretion Preservation Architecture. It organizes four governance principles: maintaining capability continuity, delegating decisions within explicit bounds, creating contestability that can consequentially alter action, and aligning authority with responsibility. The architecture does not presume that human judgment is inherently superior; professional decisions can be biased, inconsistent, or self-protective. Nor does it presume that algorithmic outputs are intrinsically dehumanizing. Its decision boundary is narrower: organizations should not treat technological capability as legitimate authority, visibility as performance, nominal voice as consequential influence, or autonomy as responsibility transfer. The argument is thus conditional and falsifiable. It would be weakened where systems demonstrably broaden learning, preserve recovery knowledge, sustain informed challenge, and improve accountable decision quality without concentrating hidden control.

Digital standardization and task decomposition

Digital standardization is the translation of work into data fields, categories, workflow rules, and comparable outputs; task decomposition is the partitioning of activity into units that can be assigned, monitored, evaluated, and recombined. A qualitative study of internet professionals shows how algorithmic employee-management software can decompose and metrically control ostensibly autonomous knowledge work while intensifying competition [7]. The case illustrates a contemporary Taylorist tendency: discretion may remain formally present while pace, priorities, and evaluation become increasingly system-mediated. It does not establish a universal trajectory for professional work, particularly beyond its national and industrial setting. The relevant inference is narrower: when complex contributions are rendered as standardized events, the organization gains a new capacity to separate execution from contextual interpretation.

Decomposition concerns managerial functions as well as task content. In platform work, allocation, monitoring, evaluation, and discipline can be distributed through an app, reducing the visibility of managerial intervention while making its effects continuous [8]. A work-design perspective similarly suggests that algorithmic functions reshape job demands and resources and distribute managerial responsibility across software, supervisors, clients, and workers [5]. This distinction prevents a category error. Standardization is not only the simplification of a technical task; it can be the modularization of coordination itself. Platform evidence does not establish prevalence in conventional professional employment, but it clarifies a mechanism by which managerial decisions become embedded in interfaces, defaults, queues, and performance signals rather than communicated as contestable human instructions.

Standardized rules create asymmetries because those who design or operate the system can define categories and access aggregate information unavailable to those being evaluated. Yet workers are not merely passive recipients. Research on online work settings shows that algorithmic control can coexist with situated agency, including adaptation, tactical compliance, and attempts to reinterpret or work around system demands [9]. Such agency should not be romanticized: action within asymmetric

rules is not equivalent to substantive control over those rules. Nor should asymmetry be treated as total domination. The analytical task is to distinguish formal permission from effective influence. A worker may choose how to complete a unit while lacking power to revise the metric, challenge the classification, or prevent the system from converting local traces into consequential judgments.

Automation can also incorporate labor more tightly rather than eliminate it. Analysis of Amazon patents depicts "humanly extended automation," in which human activity remains necessary but is imagined as a component synchronized to machine-paced processes [10]. Patents reveal organizational imaginaries, not verified workplace outcomes, so they cannot support claims about realized effects. They nevertheless illuminate a design logic relevant to knowledge work: decomposition can make people function as exception handlers, validators, or data suppliers while the system retains the appearance of autonomous intelligence. The proposed connection to skill narrowing begins here. When professionals repeatedly perform fragments without access to whole-task reasoning, their contribution may remain productive in the short term while opportunities to integrate diagnosis, execution, feedback, and recovery become less available.

Skill narrowing and procedural dependency

Skill narrowing refers to reduced breadth or depth of practiced competencies and fewer opportunities to complete whole-task cycles. It is not synonymous with specialization, which can deepen expertise, or with short-term efficiency. Ethnographic research on robotic surgery shows that automation can remove novices from legitimate participation and lead them to develop informal "shadow" practices to acquire embodied skill [11]. The study does not show that every automated profession will lose expertise. It identifies a transferable learning mechanism: competence depends on participation in consequential work, observation of experienced practitioners, and progressively accountable practice. When a system reallocates these opportunities to technology or a small expert group, current output may be maintained while the pipeline through which future professionals become capable is weakened.

Procedural dependency is reliance on prescribed sequences or system outputs without sufficient access to underlying reasoning, exception logic, or recovery knowledge. Experts can use analytical technologies competently while treating their internal operations as black boxes, which redistributes knowledge among users, technical specialists, and the system itself [12]. Adaptive opacity similarly changes where knowledge resides and who can interrogate it [2]. Black boxing does not establish incompetence, declining output, or irrational trust. Dependency becomes organizationally significant when people can follow the procedure under normal conditions but cannot explain anomalous results, reconstruct the basis of a recommendation, or continue safely when the system fails. The proposed concern is thus not tool use itself, but an increasing separation between successful procedure following and the capability to diagnose or recover.

Algorithmic adoption can also change what counts as valid knowledge. A qualitative study of organizational change shows that recommendations may initially receive symbolic compliance yet later become enacted within a transformed regime of knowing [13]. The process is political and sequential, not technologically inevitable. Experiential cues may be recoded as anecdotal, while system-compatible evidence gains authority because it is comparable, scalable, or visible to decision makers. Conversely, professionals can reinterpret system outputs through local knowledge. Skill narrowing therefore includes an epistemic dimension: the range of knowledge that remains institutionally speakable and consequential may contract even when individuals retain tacit expertise. Formal policy and enacted practice must be separated, because an organization may officially preserve discretion while rewarding only decisions that can be justified through system-recognized categories.

Opacity does not eliminate professional judgment; it can stimulate practices for reconstructing confidence. Medical professionals have been shown to engage selectively with AI outputs, varying their scrutiny according to perceived uncertainty, case characteristics, and their ability to establish grounds for trust [14]. These context-specific practices do not constitute a validated prescription or establish effects on diagnostic accuracy. They provide an important counterargument to automatic deskilling: professionals may preserve discretion by deciding when to engage, when to seek corroboration, and when to resist. The original synthesis advanced here is conditional. Procedural dependency is more likely when participation narrows, system reasoning is inaccessible, and challenge lacks consequences; it is less likely where work design sustains learning exposure, alternative evidence remains legitimate, and professionals retain accountable opportunities to reconstruct or contest recommendations.

Metric control and professional judgment

Metric control is behavioral influence exercised through recording, rating, ranking, targets, alerts, forecasts, and comparisons. The same metric technologies can be interpreted and enacted differently across occupational fields, because professional norms, local routines, and jurisdictional claims mediate their practical authority [15]. Formal installation therefore does not equal behavioral compliance, and visibility does not equal performance. Metrics can inform attention without deciding action; they can also become disciplinary when workers must continuously anticipate how traces will be classified. Algorithmic control combines metric visibility and disciplinary potential, but occupational enactment is not uniform [1, 15]. This

distinction preserves two truths: technical infrastructures expand possibilities for evaluation, yet their effects remain contested and situated. Occupational mediation should not, however, be mistaken for evidence that metric systems are benign.

Control rights shape willingness to rely on algorithms. Experiments show that allowing people even limited modification of imperfect forecasts can increase algorithm use [16]. This finding supports a bounded claim about adoption and perceived control, not workplace legitimacy, decision quality, or organizational performance. A nominal override may be psychologically meaningful while remaining substantively weak if it is difficult to exercise, penalized, or ignored. Voice opportunity must therefore be separated from consequential influence. From a professional-judgment perspective, the relevant design question is not simply whether a person can alter a recommendation, but whether they possess the information, time, authority, and protection needed to do so responsibly. Limited adjustment rights may support engagement, yet they can also transfer responsibility without transferring genuine decision power.

Reliance can arise from attraction as well as coercion. Experimental evidence indicates that people may prefer algorithmic advice to human advice under some conditions, a pattern described as algorithm appreciation [17]. Such deference challenges accounts that portray metric control only as managerial imposition. Professionals may value consistency, speed, apparent objectivity, or freedom from interpersonal politics. Preference is not universal, and it does not establish that an algorithm deserves authority. The organizational risk is subtler: voluntary reliance can normalize a system's categories and make nonconforming judgment harder to justify. When a recommendation becomes the default evidentiary anchor, departing from it may require more explanation than accepting it, even where formal discretion remains unchanged.

Task perceptions further condition reliance. People are more averse to algorithms for tasks perceived as subjective than for tasks perceived as objective [18]. Experimental task labels cannot be mapped directly onto entire occupations, because professional work often combines calculable components with ethical, relational, and contextual judgment. Still, the finding identifies an important boundary: authority is negotiated partly through beliefs about what kind of task is being performed. Digital standardization can shift that belief by presenting ambiguous work as measurable and comparable. The proposed mechanism is not that measurement eliminates judgment, but that it can redefine where judgment appears legitimate. Professional discretion is most vulnerable when system outputs look objective, alternative knowledge is difficult to document, and responsibility remains with the human actor despite constrained authority.

Table 1 organizes the evidence, constructs, relationships, uncertainties, and boundary conditions required for core constructs, proposed relationships, evidence requirements, and boundaries for digital taylorism and the erosion of professional judgment.

Table 1. Core constructs, proposed relationships, evidence requirements, and boundaries for Digital Taylorism and the Erosion of Professional Judgment.

Construct or component	Definition	Problem addressed	Distinction from adjacent concepts	Proposed role	Uncertainty	Boundary statement
Digital standardization	Work translated into data, categories, rules, and comparable outputs.	Coordination and visibility.	Not automation or performance improvement.	Evidence-derived antecedent to decomposition.	Occupational enactment varies.	No universal discretion loss is implied.
Task decomposition	Work partitioned into assignable, monitorable, recombinable units.	Scalable governance of complex activity.	Not legitimate specialization.	Proposed pathway to reduced learning exposure.	May coordinate or intensify control.	Effects depend on interdependence and learning design.
Skill narrowing	Reduced breadth, depth, or whole-task practice.	Capability continuity.	Not short-run efficiency or specialization.	Proposed mediator of dependency.	Longitudinal measures remain limited.	Never infer from adoption alone.
Procedural dependency	Reliance without accessible reasoning or recovery knowledge.	Diagnosis and continuity risk.	Not incompetence or appropriate tool use.	Evidence-supported risk; proposed capability pathway.	Can coexist with competent output.	Assess by task and expertise.
Metric control	Influence through records, ratings, targets, alerts, and predictions.	Evaluation and discipline.	Visibility is not performance; advice is not authority.	Evidence-derived control mechanism.	Aversion and appreciation coexist.	Authority depends on rights, norms, task, and accountability.
Professional judgment	Context-sensitive integration of expertise, values, uncertainty, and responsibility.	Decisions exceeding codified rules.	Not unreviewable intuition or status privilege.	Capability to protect within the proposed architecture.	Human judgment may be biased.	Discretion must remain reviewable.
Organizational deskilling risk	Proposed loss of distributed capacity to learn, diagnose, recover, challenge, and improve.	Resilience and adaptation.	Not individual dissatisfaction.	Proposed downstream organizational risk.	Long-run outcome evidence is limited.	No performance decline is asserted.

Expertise–Discretion Preservation Architecture	Proposed integration of capability continuity, bounded delegation, consequential contestability, and accountable authority.	Preventing coordination systems from hollowing out expertise.	Not a validated model, checklist, or universal prescription.	Principal proposed contribution.	Interactions and thresholds are unknown.	Requires comparative, longitudinal, multilevel testing.

Organizational consequences of deskilling

Organizational consequences cannot be inferred directly from individual reports of autonomy or strain. Platform evidence shows that perceived flexibility can coexist with algorithmic control, insecurity, and work intensity [19]. This coexistence matters because organizations may describe discretion in terms of when or where work occurs while centralizing decisions about allocation, evaluation, and acceptable pace. Autonomy can therefore be real in one dimension and restricted in another. Schedule flexibility, task discretion, epistemic authority, and control over evaluation should be assessed separately rather than collapsed into a single autonomy label. The evidence does not establish equivalent effects in standard employment or all professional occupations. It does, however, challenge the assumption that visible choice necessarily indicates retained authority, sustainable capability, or favorable job quality. It also cautions against interpreting responsibility for outcomes as proof that workers controlled the conditions producing them.

From a labor-process perspective, ratings, monitoring, and market-mediated discipline can reduce the indeterminacy through which workers ordinarily negotiate effort and discretion [20]. Organizational deskilling risk may emerge through linked work-design changes, black-box knowledge redistribution, and labor-control processes [5, 12, 20]. This is an original cross-domain interpretation, not a tested mediation model. Its proposed organizational consequence is capability fragility: fewer people may retain the knowledge needed to diagnose anomalies, recover from system failure, train successors, or challenge an erroneous operational premise. Such fragility can remain hidden while routine outputs appear stable. Research should therefore examine the distribution of exception knowledge, opportunities for whole-task practice, succession depth, recovery competence, and the treatment of discrepant evidence rather than relying only on current productivity indicators. The risk should not be equated with demonstrated performance decline, because the available evidence is stronger on mechanisms, work experience, and knowledge redistribution than on long-run organizational outcomes.

Control may persist not only through coercion but through constrained forms of consent. Longitudinal ethnography in ride-hailing shows how algorithmic rewards, sanctions, and repeated choices can produce a job experienced as simultaneously attractive and harmful [21]. The process helps explain why workers may continue participating in systems they criticize: flexibility, income opportunities, identity, and local alternatives can coexist with intensification and asymmetrical control. This mechanism is context-bound and should not be generalized to all professionals. For knowledge-intensive organizations, its relevance is analytical: acceptance of a digital workflow does not demonstrate endorsement of its authority structure. Compliance may reflect constrained alternatives, adaptation, or the practical costs of contestation rather than confidence in the system. Analysts should also distinguish active consent from acquiescence, tactical compliance, resignation, and dependence, because identical behavioral traces may conceal different relationships to organizational authority.

Surveillance creates an additional legitimacy boundary. Employees differentiate among monitoring practices according to data type, organizational purpose, transparency, and perceived intrusiveness [22]. Acceptability is not proof of improved performance, well-being, or fairness, but differentiated attitudes show that resistance is not indiscriminate. Organizations therefore face a governance problem rather than a binary choice between measurement and no measurement. Data collection should be assessed against necessity, proportionality, interpretability, access, retention, and downstream use, including whether information collected for coordination is later repurposed for discipline. The proposed consequence of ignoring these boundaries is not simply dissatisfaction. Persistent opacity about monitoring may weaken trust, suppress diagnostic voice, encourage defensive documentation, and induce workers to optimize visible indicators rather than substantive outcomes. These relationships remain conditional and require longitudinal, multilevel testing that separates attitudes, behavior, occupational practice, and organizational capability.

Preserving expertise and discretion

Preservation begins with explicit allocation of decision rights. Organizations can configure human, AI, and hybrid decision structures with different implications for authority and accountability [23]. The proposed Expertise–Discretion Preservation Architecture does not designate one structure as universally superior. It asks whether each configuration identifies who frames the problem, selects and interprets evidence, makes the decision, bears responsibility, and can initiate review or redesign. Formal allocation must also be compared with enacted practice, because nominal human authority may be undermined by time pressure, interface defaults, escalation costs, or performance incentives. Its four mutually reinforcing safeguards are capability continuity, bounded delegation and calibration, consequential contestability, and accountable authority. They are

normative design principles, not validated intervention effects, and their relevance depends on task uncertainty, occupational stakes, institutional constraints, employment arrangements, professional norms, and implementation quality.

Figure 1 presents the original conceptual synthesis for preserving expertise and discretion, showing how the article's principal constructs, mechanisms, uncertainties, and decision boundaries are connected.

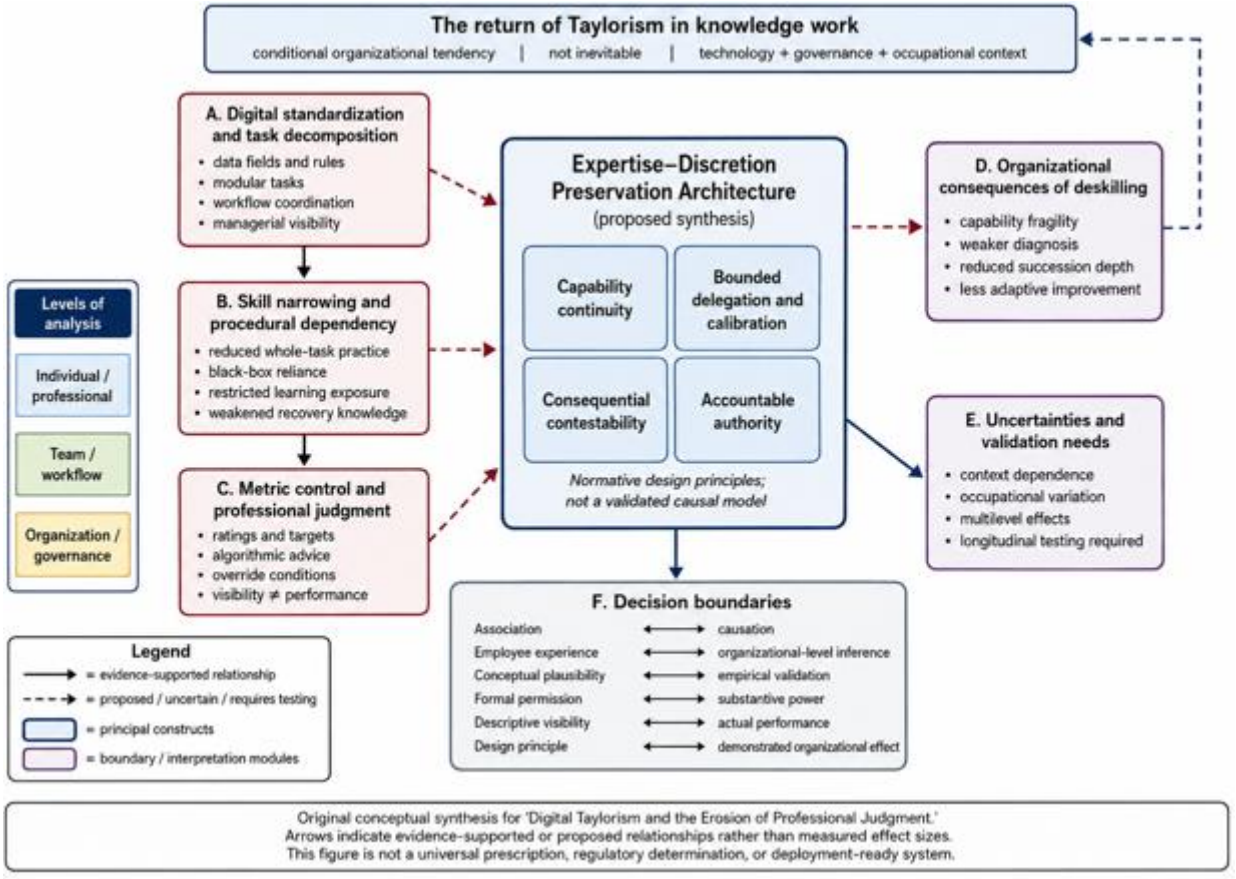

Figure 1. Preserving Expertise and Discretion

Bounded delegation requires more than a blanket instruction to keep a human in the loop. Experimental work indicates that productive delegation depends on task allocation and calibration because human and AI errors, confidence, and strengths are not automatically complementary [24]. Limited adjustment rights may increase willingness to use algorithmic advice [16], but an override is meaningful only when users can understand relevant limitations, access alternative evidence, and alter the consequential decision without retaliation. Delegation should therefore specify escalation conditions, review authority, confidence limits, responsibility for unresolved uncertainty, and periodic reassessment as tasks, data, or occupational conditions change. It should also protect against automation bias and reflexive rejection by requiring reasons to be examined rather than presuming either acceptance or override is correct. Experimental tasks do not establish field effectiveness, and these principles should be evaluated in occupational settings where consequences, interdependence, and accountability are materially different.

Capability continuity treats expertise as an organizational resource reproduced through participation, not an inventory residing permanently in individuals. Human intuition, contextual understanding, and holistic judgment may complement computational scale and pattern recognition [25]. Preserving expertise requires continued learning exposure, practices for engaging opaque outputs, and a complementary role for contextual human judgment [11, 14, 25]. This proposed integration protects whole-task practice, apprenticeship, exception handling, recovery drills, comparison of recommendations with outcomes, and structured debriefing after overrides or failures. Protected learning time matters because capabilities that are rarely exercised can become unavailable precisely when abnormal conditions make them necessary. The design principle does not romanticize professional discretion: human judgment may be biased, inconsistent, exclusionary, or resistant to warranted change and must remain reviewable. Its purpose is to retain the capability to interrogate both human and computational claims rather than granting either source presumptive authority.

Consequential contestability and accountable authority complete the architecture. Substitutive decision-making AI can threaten professional role identity and prompt adaptation strategies concerning what expertise means and how contribution is demonstrated [26]. Identity effects are conditional, but they indicate that governance must address development, participation, and meaning, not only formal decision permissions. Workers need channels through which explanations, objections, overrides,

and incident knowledge can alter workflows, models, training arrangements, and performance criteria. A voice mechanism that records dissent without changing decisions or design is procedurally visible but substantively weak. Named decision owners must remain accountable for delegated systems, while professionals should not bear responsibility for choices they were structurally unable to influence. Testing the architecture requires comparative longitudinal studies combining task logs, process tracing, skill-retention measures, override quality, identity trajectories, and multilevel outcomes. Evidence should distinguish nominal voice from consequential influence and short-run coordination from sustained organizational capability.

Conclusion

Digital Taylorism is best understood not as the mechanical return of an unchanged managerial doctrine, but as a conditional organizational tendency produced when digital standardization, task decomposition, opaque knowledge redistribution, and metric authority become mutually reinforcing. The central concern is not technology adoption in itself. It is whether organizational arrangements preserve the conditions through which people learn whole tasks, interpret uncertainty, challenge classifications, recover from failure, transmit expertise, and bear responsibility commensurate with their authority. This framing permits criticism without assuming that every standardized process is harmful or every exercise of professional discretion is defensible.

This Critical Viewpoint Article has proposed the Expertise–Discretion Preservation Architecture as a bounded synthesis linking capability continuity, bounded delegation and calibration, consequential contestability, and accountable authority. The architecture reframes professional discretion as a distributed organizational capability rather than unrestricted individual freedom. It also rejects four substitutions that can obscure governance failure: visibility for performance, formal permission for substantive power, autonomy for transferred responsibility, and technological capability for legitimate authority. These distinctions define decision questions, not validated thresholds or implementation rules.

The argument remains deliberately limited. The proposed pathway from decomposition to capability fragility has not been empirically validated; the underlying evidence varies by occupation, employment arrangement, national setting, level of analysis, technology, and research design. Standardization may improve consistency, reduce bias, or release professionals from routine work, while workers and occupational groups may adapt in ways that preserve or create expertise. Human judgment is not inherently superior and must remain contestable. Organizational outcomes cannot be inferred from worker attitudes, isolated task performance, or formal policy alone.

The practical implication is therefore a research and design boundary, not a universal prescription. Organizations should evaluate whether digital coordination broadens or narrows learning exposure, whether overrides carry consequences, whether responsibility follows decision rights, whether discrepant knowledge remains legitimate, and whether incident knowledge feeds system redesign. Longitudinal, comparative, and multilevel studies are needed to test, refine, challenge, or reject the proposed architecture. Until then, preserving expertise and discretion should be treated as an explicit governance objective whose value and mechanisms require contextual evidence.

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