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AI and the End of Time

Feb 27, 2026 **SAMI MAHROUM**

DUBAI – The debate about AI remains overwhelmingly focused on three key questions: Which jobs will disappear? Which skills will endure? And are current valuations justified? But these questions, while important, obscure a deeper one: What will replace time as the measure of value, and who will control it?

For two centuries, time has been capitalism's organizing principle. In his 1967 essay "Time, Work-Discipline, and Industrial Capitalism," the British historian E.P. Thompson showed how the factory system replaced task-based labor with the discipline of the clock, enforced by bells, timetables, and moral exhortations against "wasting time." Under this arrangement, workers sold hours, and employers purchased them. Labor laws were structured around the eight-hour workday, and pensions were determined by years of service.

The clock established a shared metric: an hour meant the same thing everywhere, for everyone. Because time was standardized, exploitation could be measured. And because it could be measured, it could be contested. As a result, collective action became possible.

That system is now breaking down, not because workers have grown undisciplined, but because AI has undermined its underlying logic. Consider, for example, a management consultant who oversees three AI agents for two hours. The agents then work autonomously for 20 hours, producing a \$50,000 report. Is the consultant paid for two hours, for 20, or a fixed percentage of the value created? The time-based framework offers no coherent answer, yet wage structures and labor laws continue to impose clock discipline on work that is no longer defined by hours spent.

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In *The Wealth of Nations*, Adam Smith described labor as the original measure of exchangeable value in early societies, though he did not treat it as a universal determinant of value in advanced capitalism. David Ricardo, in *On the Principles of Political Economy, and Taxation* (1817), went further, formalizing labor time as the regulator of relative prices, but only under specific conditions, namely reproducibility and labor scarcity.

Karl Marx extended this line of argument in Volume I of *Capital* (1867), arguing that value reflects the amount of socially necessary labor required to produce a good while also anticipating the destabilizing consequences of mechanization. As productivity increased, he asserted, value would steadily shift away from direct labor toward control over the means of production.

What Smith, Ricardo, and Marx understood – albeit in different ways – was that labor time can serve as a measure of value only if human time is naturally scarce.

Put simply, output requires time; more time generally means more output. With scarcity built in, those who control labor control the primary source of value.

By making human time functionally abundant, AI renders that assumption obsolete. In four hours of work, an engineer can now deploy a large language model that runs autonomously for 20 more. A consultant's prompt can generate analyses that once required days to prepare. The natural scarcity of human time, which underpinned two centuries of economic theory, is no longer a binding constraint.

But scarcity has not disappeared; it has merely relocated. When labor time is not a scarce input, value shifts to those who own the systems that perform the work and control access to them. The engineer's worth is measured less by hours worked and more by command over critical infrastructure, while the consultant's value lies in privileged access to AI systems and the reputation that secures it. Just as Marx predicted, rising productivity consolidates value around ownership of the means of production.

From Hourly Wages to Outcome-Based Pay

Commission-based, outcome-focused compensation has long been used in fields like sales, real estate, and consulting. For most workers, however, it was too risky, as it required substantial personal investment and carried a high likelihood of failure.

The rise of AI has flipped that calculus. If an AI agent performs 80% of the work, workers' capital requirements and downside risks fall dramatically. A developer using GitHub Copilot can now afford to work on commission; a consultant using ChatGPT can accept outcome-based pay without existential risk; and a designer working with Midjourney can price by output rather than by hours. For the first time, workers face a genuine choice between time-based security and value-based autonomy.

But this choice is not equally available to everyone. A developer without Copilot cannot rely on commission-based work, just as a consultant without ChatGPT or a strong client network cannot negotiate outcome-based fees. The shift from hourly compensation makes sense only for workers with access to powerful systems and the reputation to leverage it. For everyone else, it means a descent into precarity.

Outcome-based compensation is also more complex than it appears. Markets do not price work according to a single metric. Speed, quality, perceived value, and supplier scarcity all matter. What workers are paid ultimately reflects bargaining power, not objective measurement. In sectors where demand for reliable AI-augmented suppliers exceeds supply, sophisticated buyers – consultancies, governments, enterprises – are introducing retainer contracts that offer guaranteed minimum purchases, reserved capacity, and income stability in exchange for priority access.

These arrangements are based neither on hourly wages nor on pure commissions. They are demand-side responses to supply-side scarcity. Workers with retainers gain stability, while everyone else faces volatile, outcome-based pricing. Consequently, the distribution of returns from AI-augmented labor increasingly depends on bargaining

power and access to stable contracts, which ultimately hinge on who owns and controls the tools that make labor productive.

Three Incompatible Temporal Arrangements

As AI severs the link between time and output, and the foundation of modern labor contracts starts to give way, what is emerging in its place is not a single coherent system, but three distinct and incompatible ways of organizing economic life: machine time, personal time, and clock time.

Machine time is continuous and uninterrupted. Consider a cloud-infrastructure engineer at a major tech firm. Officially, the engineer works 40 hours a week. In practice, the system requires stability around the clock. When an outage occurs at 3:00 a.m., they may work 18 hours straight.

How should this labor be priced? A fixed salary obscures the relationship between time invested and value produced. The boundary between the engineer's contribution and the system's autonomous operation cannot be measured, since management cannot isolate what the engineer did; it can only observe what the system accomplished while the engineer was accountable for it. Human agency is therefore inseparable from the system's performance.

This raises a clear contractual issue. How do you draft a compensation agreement when a worker's contribution cannot be isolated or measured? Whereas traditional contracts specify hours, outputs, or deliverables, machine-time work fits none of these categories. A contract might require the engineer to "maintain system stability," but that obligation becomes difficult to define when the system operates autonomously. Is the engineer responsible for failures, flawed automated decisions, or the economic costs of outages? The contract cannot fully specify such obligations because the boundary between human work and machine agency is inherently ambiguous.

In reality, the engineer's value lies in their stewardship of a critical system they did not build. Their role is effectively custodial, as they oversee value created elsewhere. By defaulting to fixed salaries that obscure both hours and output, employers effectively capture the productivity surplus the system generates. Workers accept compensation that may understate both the responsibility they bear and the strategic importance of the infrastructure they manage. Both parties operate in contractual fog, but the fog favors capital.

Personal time, by contrast, is self-scheduled and asynchronous. A consultant who uses ChatGPT to compress analysis into four concentrated hours and deliver a \$50,000 report retains decision-making authority – evaluating the options generated by the AI model, selecting the most appropriate, interpreting context, and reconciling contradictions. With agency visible and attributable, the contract is straightforward: deliverable by date X for price Y.

But that price captures both the consultant's judgment and the model's analytical capacity. The consultant has access to the system; the client does not. Reputation amplifies both, as clients trust the consultant's judgment and assume the best tools

are being used. While the contract names a single price, it reflects three distinct sources of value: expertise, system access, and brand.

Pricing is thus outcome-based and shaped by bargaining power. Identical work can command radically different fees based not on effort but on reputation and client access. One consultant may secure \$50,000, while another may charge only \$20,000 for a similar analysis. Given that both have equal access to the same system, the difference lies in the power to monetize credibility and relationships.

Lastly, clock time endures in settings that demand continuous, coordinated presence. Nurses, for example, work 12-hour shifts and are paid for time, regardless of outcome. Their contracts specify hours, shifts, and responsibilities, while clinical decisions that may determine patient survival are folded into the hourly wage. An hour in the emergency room counts the same as an hour of routine care.

Clock time is the clearest and most straightforward contractual arrangement: show up, perform assigned duties, receive an agreed wage. But it is also the most detached from measured value creation. Nurses do not control the systems that determine their compensation, including hospital reputation, patient demand, and insurance reimbursement. With no brand to leverage and no infrastructure to monetize, they have only their time, and that time is priced less by the value created than by institutional budgets and labor supply. As automation expands into other sectors, productivity gains accrue elsewhere, while clock-time workers are left structurally exposed.

Labor Law Unravels

Each of these three temporal regimes rests on a distinct contractual logic and distributes control over value creation differently. Under machine time, workers maintain a system they do not own; responsibility is continuous, yet compensation is opaque. Personal time reverses that equation: workers own the output but depend on systems controlled by others, monetizing their expertise, access, and reputation. And under clock time, workers control neither the infrastructure nor the price of their labor. Pay remains strictly tied to hours, regardless of the value created.

No single labor regime can reconcile these differences. Overtime protections, for example, collapse under machine time, where workers are perpetually on call. They are equally ill-suited to personal time, where work is sporadic and self-directed. Only in clock time, where labor is measured by hours worked rather than by outcome, do such protections remain viable.

Traditional employment categories break down as well. While machine-time workers are always on call, they are never clearly employed. And while personal-time workers with multiple retainer contracts may have a steady income, each contract can be terminated at any time. Clock-time workers still fit the conventional model, though their share of the labor force is declining.

The same fragmentation undermines benefit systems. Unemployment insurance presumes clearly defined jobs and predictable transitions between work and joblessness. Pension schemes rely on continuous income histories tied to identifiable

employers, while health-coverage models presuppose stable employment status. None of these assumptions holds across all three temporal regimes.

To be sure, the balance between them will vary across countries, shaped by cultural and institutional norms that determine how organizations distribute control over work and access to infrastructure. The pace of this shift also depends on the level of technical exposure. According to the MIT Iceberg Index, roughly 11.7% of US wage value is concentrated in execution-focused roles that primarily implement decisions made by others and can therefore be replaced by current AI systems.

But technical exposure alone does not guarantee institutional adoption. In countries where hierarchical authority is culturally legitimate, such as the United States and Singapore, firms can more readily consolidate system control and automate execution-focused work. As machine-time and personal-time regimes expand, contracts will be rewritten or abandoned, and control over productive systems will become increasingly centralized.

By contrast, in countries like Germany, France, or Spain, where labor law and formal worker representation constrain managerial authority, unilateral restructuring faces institutional limits. Because significant organizational changes typically require negotiation with worker representatives under established labor frameworks, execution-focused roles are more likely to be reframed as interpretive or judgment-based functions, extending clock-time protections rather than eliminating them outright. AI may have the technical capacity to automate these jobs, but the institutional and political cost of doing so remains prohibitively high.

Meanwhile, in the Gulf states, hierarchical authority and rapid modernization could lead to the swift automation of administrative functions and the consolidation of system control. Given the region's heavy reliance on migrant workers, management can rewrite contracts at will, enabling power to shift quickly from labor to capital.

The result is a segmented contractual landscape that mirrors existing labor-market hierarchies. Professional and skilled workers may secure retainer-based arrangements with privileged access to advanced systems, while their lower-wage counterparts absorb the risks of machine-time labor.

The fragmentation of time is therefore not uniform. The US will likely shift more quickly toward machine-time and personal-time regimes, concentrating system ownership and normalizing fluid contracts, while Germany will preserve greater human agency and negotiate shared control over AI deployment. In the Gulf states, rapid AI adoption will coexist with deep stratification, ensuring that the benefits accrue disproportionately to skilled professionals and the owners of capital.

The Race to Rewire Work

Policymakers face an unprecedented challenge: designing coherent labor laws for three incompatible temporal regimes, each organizing authority in its own way. As time-based compensation unravels, unified labor laws become harder to sustain. Retainer-based procurement and machine-time contracts may become the dominant model for those with leverage, but most workers will face volatile outcome-based

pricing and opaque terms. While knowledge workers with strong client relationships and engineers at major tech firms stand to benefit from this transition, the likely result is deepening stratification, not shared prosperity.

Intensifying global competition further narrows the space for national experimentation, as the fragmentation of time is not merely a domestic challenge but a global contest over who controls productive systems and who bears the transition costs. Countries that move rapidly toward machine-time and personal-time regimes, such as the US and Singapore, will produce AI-intensive goods and services at lower cost. At the same time, countries that preserve clock-time protections, like Germany, France, and Spain, will face sustained competitive pressure as higher labor costs and slower automation make their exports increasingly expensive.

But moving slowly won't necessarily preserve worker protections. Over time, market pressures will force policymakers to make a difficult choice: accelerate the transition toward machine time and personal time to remain competitive, or accept industrial decline as AI-intensive production shifts elsewhere.

Taken together, these developments mark a turning point. We are entering the first open conflict over the meaning of time since the Industrial Revolution, already evident in employment contracts, platform governance, labor law, and intellectual-property regimes. The question is no longer whether this transition will happen, but who will control it – and who will pay for it.

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