

Symbiarchic leadership: Leading integrated human and AI cyber teams



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Abstract

Purpose: This conceptual article introduces symbiarchic leadership as a way of leading integrated human–AI ‘cyber teams’, where AI agents contribute directly to knowledge work and, increasingly, decision preparation in HR and across organisations.

Design: The article offers a conceptual synthesis of practice-relevant research on human–AI collaboration, hybrid teams and digital-era leadership, alongside emerging practitioner examples of AI embedded in workflows and translates this into an HR-oriented leadership framework.

Findings: Symbiarchic leadership comprises four linked practices: (i) Allocating work by comparative advantage. (ii) Treating AI outputs as hypotheses that require human sensemaking. (iii) Managing the human–AI relationship by building adoption, psychological safety and calibrated trust. (iv) Embedding governance so accountability, bias testing, privacy, auditability, escalation thresholds and human oversight are explicit rather than assumed.

Originality: The paper advances current ‘augmentation’ discussions by specifying the leader’s distinctive role when ‘lead agency’ shifts between humans and AI and by articulating the HR system changes needed to sustain performance, legitimacy and wellbeing.

Practical implications: HR can operationalise symbiarchic leadership by updating competency models, selection and assessment, leadership development and coaching, job design, performance and reward criteria and AI governance routines, enabling organisations to realise AI-enabled productivity without degrading ethics, trust or human judgement.

Key words: Symbiarchic leadership, AI leadership, Cyber teams, Technology leadership

Introduction

The rapid integration of artificial intelligence into organisations is reshaping how work is organised and how teams perform. AI tools have moved beyond back-office automation and are increasingly used as 'cyber teammates' that generate outputs and recommendations within knowledge-work processes, in some cases being trialled as decision-support advisers alongside senior leaders (Aliando, 2025). Organisations report productivity gains when work processes are redesigned to integrate AI agents into human teams.

For HR, these developments raise fundamental questions about what leadership becomes as organisations move towards the 2030s. Managers will increasingly find that their 'team' includes both human employees and AI agents, with different capabilities, reliabilities and needs. Traditional models of leadership, built on assumptions of human-to-human interaction, provide only partial guidance for this new reality.

Human–AI collaboration and the leadership challenge

Early waves of AI adoption focused on automating narrowly defined processes, for example generating written content or providing advice on a workplace issue, such as preparing for a one to one performance conversation. Studies (Dell'Acqua et al., 2024; Dell'Acqua et al., 2025) indicate that organisations gain most when work is redesigned so humans and AI combine strengths, with clear implications for leadership and HR practice. While technical skills will grow in importance, Koponen et al. (2023) highlight that middle managers also need empathy, communication and emotional intelligence to sustain engagement and motivation.

These studies have highlighted the complexity of AI implementation as well as demonstrating its potential as a genuine teammate, influencing both performance and affect, but only when leaders intentionally design and steward the human–AI partnership.

Wilson and Daugherty (2018) identify three critical human roles in AI-enabled work: training machines, explaining their outputs and sustaining their responsible use. Building on this work, recent practice highlights two overarching leadership challenges in hybrid teams: engagement and discernment (Passmore et al., 2026).

Engagement means ensuring AI is adopted across the team's workflow rather than being confined to a few digitally confident members. However, even in technology-oriented organisations, experience suggests that full AI engagement requires sustained sponsorship, training and coaching to support mindset shifts and new habits. Discernment concerns knowing when and where to rely on AI and when to defer to human judgement. Dell'Acqua et al. (2024) describe the 'jagged technological frontier', showing that AI capability is task specific and evolving, which complicates judgements about when to trust the tool and for which tasks. Leaders therefore need a nuanced understanding of AI's strengths and limitations, differentiating routine, data-heavy tasks

that can be automated from decisions requiring contextual insight, ethical sensitivity or human connection. In practice, this means setting clear thresholds for when AI recommendations can be accepted with limited review, when experienced decision-makers must review, and when the task should remain human-led.

Leadership in hybrid teams also involves continuous monitoring of AI systems. Koponen et al. (2023) note that managers may be freed from some routine tasks, yet face new oversight work such as checking outputs, investigating anomalies and ensuring accountability for AI influenced decisions remains clear. Leaders must view AI as part of the team whose “performance” requires evaluation and quality control, including mechanisms to identify errors or ‘hallucinations’ and maintain audit trails for decisions.

Human factors remain central. Team members may distrust AI, worry about job loss or feel uneasy about opaque algorithms. Over-anthropomorphising AI, for example, by giving it human names or applying a known human persona to it, can raise unrealistic expectations and damage trust when systems fail. Leaders need to calibrate trust in AI, framing it as a powerful but imperfect collaborator rather than an infallible authority. They should encourage psychological safety so that employees can question AI outputs without fear, while also discouraging complacency.

Defining ‘Symbiarchic leadership’

The emergence of cyber teams that integrate people and AI agents points to a new form of leadership: symbiarchic leadership. The term combines symbiosis, implying mutual benefit, with archic, meaning to lead or govern. Symbiarchic leadership positions the leader as orchestrator of an interdependent relationship between human team members and AI agents, treating AI not merely as a tool but as a non-human actor within team processes.

Traditional leadership models assume a human system in which a leader influences followers by vision, decision-making and interpersonal skill. In an AI-enabled context, the leader becomes a curator of co-intelligence (Mollick, 2024), integrating human judgement, AI insights and team contributions into a coherent decision process. Rather than acting as a heroic individual decision-maker, the symbiarchic leader facilitates a continuous collaboration loop between humans and AI agents.

Several features characterise this approach, beginning with task allocation based on comparative advantage. Symbiarchic leaders deliberately assign tasks based on competence. In AI-integrated workflows, data-intensive analysis, pattern recognition and routine reporting are often allocated to AI agents, while work requiring empathy, political judgement and complex stakeholder engagement remains with humans. The lead agent can shift between AI and human as context changes and technological developments reshape capability.

Second, other tasks like ideation and strategic thinking will become shared, iterative processes. AI-generated insights can provide a starting point for a decision, while

human leaders test assumptions by posing questions and scenarios, applying cultural, ethical and contextual judgement before implementation. Learning is mutual: humans refine their mental models through exposure to more enhanced data-driven insights, while AI systems improve as they are re-trained with human feedback.

Third, symbiarchic leaders invest in relationship management across the human–AI interface. They recognise that employees' attitudes to AI, whether they see it as a mere tool or as something closer to a colleague, shape cooperation and performance. Leaders demystify AI by explaining its role, providing training to build confidence and acknowledging emotional reactions from anxiety to curiosity (Passmore et al., 2026). They right-size the AI's status in the team, sometimes personalising it enough to aid engagement, but avoiding the pretence that it possesses human-like agency.

Finally, symbiarchic leadership carries a strong ethical and governance dimension. Leaders remain the moral and legal anchor for decisions influenced by AI. They ensure that algorithms used in areas such as recruitment, promotion or performance management are tested for bias, that data privacy is respected and that no critical decision is left wholly to an algorithm without human oversight. In Grove's (1999) terms, AI represents a strategic inflection point; symbiarchic leaders navigate it by aligning technological possibilities and placing organisational values at the centre.

Developing symbiarchic leaders

If symbiarchic leadership is to move beyond a useful label, HR needs to embed it into leadership identification, development and support systems. Identifying potential symbiarchic leaders involves looking beyond traditional criteria such as strategic thinking and interpersonal skill to include digital curiosity, openness and humility. Managers who consult data and challenge their own assumptions, experiment with AI tools and translate technical insights into accessible language are strong candidates; those who are rigid or technophobic may struggle.

Targeted development is then required. Conventional leadership programmes remain relevant but must be complemented by AI literacy and human–AI collaboration skills. Leaders do not need to become data scientists, but they should understand, in non-technical terms, how machine learning systems operate, where bias can enter and why models may fail. Scenario-based simulations are particularly powerful: for example, exercises in which leaders must coordinate a response to a crisis with recommendations from an AI decision-support system, deciding when to move quickly on AI input and when to pause for human review.

Coaching and mentoring can accelerate learning, especially where early adopters of AI-enabled projects share experiences with peers. Change management capabilities also need to be re-framed for the AI era, equipping leaders to communicate the purpose of AI adoption, address fears of displacement and involve employees in redesigning work. Ethical decision-making education, using cases where AI has produced unfair or

harmful outcomes, helps normalise critical questioning of AI recommendations in everyday practice.

Organisational context determines whether individual leaders can enact symbiarchic behaviours. Top teams need to signal that AI is primarily a means of augmenting human capability, not a blunt cost-cutting instrument. Performance measures should reward experimentation, learning and responsible AI use, rather than only short-term efficiency. Infrastructure also matters: user-friendly AI tools with transparent outputs, access to internal AI expertise and communities of practice where leaders can share dilemmas all make it easier for symbiarchic leadership to take root.

Psychological competencies underpin these practices. Symbiarchic leaders display a growth mindset and learning orientation, continually updating their understanding as AI tools evolve. They combine analytical decision-making with high emotional intelligence, recognising that, although AI can take over some monitoring and analytical tasks, it cannot yet provide meaning, motivation or deep care for employees (Larson and DeChurch, 2020). This creates an opportunity: freed from certain transactional activities, leaders can spend more time coaching, articulating purpose and stewarding wellbeing – tasks that remain irreducibly human.

Implications for HR

For HR professionals, the rise of human–AI teams and the emergence of symbiarchic leadership present both a challenge and an opportunity. Existing competency frameworks, leadership pipelines and learning architectures are often grounded in assumptions of purely human teams, yet HR is uniquely placed to shape how AI is integrated into people management and to ensure that human-centred values are retained.

Practically, HR can begin by reviewing leadership models to incorporate explicit expectations around AI literacy, collective decision-making with AI, ethical governance and calibrated trust in technology, reflecting the practitioner agenda already emerging in SHR (Sposato, 2025).

At the same time, HR policies on performance management, reward and job design must adapt to a world where an individual's output increasingly reflects their ability to leverage AI tools. Recognising and rewarding symbiarchic behaviours, such as leaders who interrogate AI and involve their teams in experimenting with new tools, will help shift culture away from either uncritical techno-enthusiasm or defensive resistance.

AI's growing presence in teams does not make leadership obsolete; it makes leadership more complex. Symbiarchic leadership offers a way of conceptualising the leader's role in this emerging landscape: as a curator of collective intelligence who integrates human and artificial capabilities, protects ethics and fosters learning. For HR, supporting the development of such leaders is now a strategic priority. Organisations that invest early

in symbiarchic leadership are likely to be better positioned to harness AI's potential while preserving the human qualities that underpin sustainable performance.

Conclusion

Symbiarchic leadership provides a practical way to describe what leaders must do when AI becomes an active contributor to team outputs. It reframes leadership as orchestration of comparative advantage, disciplined judgement about when to rely on AI and governance that protects accountability and values. For HR, the priority is to embed these expectations into capability frameworks, leadership development and everyday management routines so that AI adoption increases performance without eroding trust, fairness or human responsibility.

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