From Alliances to Swarms:

Rethinking Competition and Collaboration in the Age of AI

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A user opens a webpage. What follows is not a transaction within a single firm, or even a single platform. It is an interaction that spans multiple ecosystems at once. Within milliseconds, autonomous systems go to work across advertising networks, data providers, platforms, publishers, and demand-side intermediaries. Some collaborate by sharing signals, coordinating through protocols, and enabling the interaction to occur. At the same time, they compete.

Advertiser agents predict the value of the user, estimate competitors' bids, adjust their own bids dynamically, and decide whether to enter or exit. Data systems enrich the context. Platform rules determine eligibility. Ranking systems select the winning offer. In one instant, one configuration of agents wins. In the next, a different configuration wins because it predicted better, priced better, or responded faster.

Now consider a second example. A customer taps a card to make a payment. In less than a second, a complex coordination unfolds across a payments ecosystem. Issuing banks, merchant processors, card networks, fraud-detection systems, authentication tools, and risk engines all participate. Behind the scenes, multiple agents evaluate the transaction simultaneously. Some push toward approval, others toward rejection. Some optimize for fraud prevention, others for customer experience, merchant acceptance, or network reliability.

These agents do not belong to a single firm. They operate across firms, platforms, systems, and objectives. They do not merely collaborate. They also compete. What determines the outcome is not a single decision-maker. It is the result of a temporary configuration of capabilities, agents, rules, and data flows operating across organizational boundaries.

This is the rise of the swarm. Swarms are temporary, real-time configurations of human and AI agents, capabilities, data, and protocols drawn from multiple firms and ecosystems. They assemble to execute a specific interaction, compete and collaborate simultaneously, and dissolve once the interaction is complete.

The Limits of Structure

For decades, leaders shaped competition through structure. They decided what to own, what to acquire, what to outsource, whom to partner with, and how to position the firm within a broader ecosystem. These choices defined the boundaries of the firm and the terrain on which it competed.

his logic has deep roots in strategy research. Scholars such as Ranjay Gulati, Jeffrey Dyer, and Harbir Singh showed how alliances allow firms to access capabilities they do not own, manage uncertainty, and build relational advantage through interfirm collaboration. Network perspectives, associated with scholars such as Ranjay Gulati and Walter Powell, emphasized that a firm's position among partners shapes both opportunities and constraints. More recently, ecosystem scholars such as Ron Adner, Michael Jacobides, Annabelle Gawer, and Carmelo Cennamo extended this logic further, showing how value creation increasingly depends on the alignment of multiple actors around platforms, standards, interfaces, and complementary investments.

Those insights remain essential. But AI changes the tempo and unit of coordination. Alliances explain how firms access capabilities over time. Ecosystems explain how interdependent actors coordinate around a shared value proposition. Swarms explain what happens when those capabilities are assembled, contested, and dissolved in real time by human and AI agents.

The unit of strategy is no longer only the firm, the alliance, or the ecosystem. Increasingly, it is the momentary configuration of agents and capabilities that determines whether value is created and who captures it.

Three Layers of Competition

To understand this shift, strategy needs to operate across three interconnected layers: **layers: capability bundle**, context, and dynamics.

The first layer is the **capability bundle**: the resources, capabilities, data, AI models, and partner networks that a firm can deploy.. Mergers, acquisitions, alliances, and partnerships define the capability base of the firm. They determine what assets exist, who controls them, and what capabilities can be mobilized.

Firms still acquire capabilities that must be tightly controlled. Amazon has built logistics and cloud infrastructure through internal investment and acquisitions. Microsoft has used partnerships and investments to secure access to frontier AI capabilities. These decisions matter because they determine what a firm can bring into competitive arenas.

But structure alone does not determine outcomes. The second layer is **context**. Ecosystems provide the environment in which capabilities interact. Platforms, standards, interfaces, rules, and complementors determine who can participate and how coordination is possible.

Yet ecosystems are no longer stable constellations of firms with fixed roles. In AI-enabled environments, ecosystems are increasingly fluid. A single interaction may draw simultaneously on advertising, payments, identity, logistics, cloud, and data ecosystems. Roles shift. Participants enter and exit. Capabilities are assembled and reassembled.

At Apple, the App Store ecosystem appears structured, but value creation constantly shifts as developers, services, user behavior, and platform rules evolve. At Visa, rules provide stability,

but fintech players, data-driven models, authentication systems, and risk engines continuously reshape participation. Google's advertising ecosystem is not static; it is a constantly shifting environment of bidders, data flows, models, and optimization systems.

Ecosystems define the field of possible interaction. But they do not determine which capabilities will be combined in a particular moment, how they will be deployed, or who will capture value. That is the third layer: **dynamics**. Swarms determine how value is created and captured in real time. Each ad impression, payment authorization, delivery route, search query, recommendation, or fraud decision can trigger a different configuration of agents and capabilities. Swarms assemble, act, compete, collaborate, and dissolve.

Capability bundle defines potential. Ecosystems define possibility. Swarms determine outcomes.

What Makes Swarms Different

Swarms are not simply faster alliances or more dynamic ecosystems. They differ in five ways.

First, swarms are **temporary**. Alliances are durable relationships. Ecosystems are continuing environments. Swarms are momentary. They form around a specific interaction and disappear once that interaction is complete.

Second, swarms are increasingly **agentic**. Alliances were negotiated by managers and governed through contracts. Swarms are increasingly coordinated by AI agents that predict, bid, route, approve, reject, recommend, authenticate, or escalate.

Third, swarms are **compositional**. They draw from changing combinations of firms, models, data providers, platforms, devices, protocols, and human actors. The same firm may participate in many different swarms simultaneously, sometimes as orchestrator, sometimes as complementor, sometimes as competitor.

Fourth, swarms combine **collaboration and competition** in the same interaction. In an advertising auction, participants collaborate through shared protocols and compete for the impression. In payments, firms collaborate to complete the transaction while competing over risk, fees, data, and customer ownership.

Fifth, swarms are **outcome-specific**. Ecosystems define the conditions under which interaction is possible. Swarms determine what happens in a specific transaction, route, approval, recommendation, or bid. This is why swarms matter strategically. They are where ecosystem potential becomes economic outcome.

The Swarm Stack

If firms are to compete in swarms, they need to understand the architecture that makes swarm competition possible. This architecture can be thought of as the **Swarm Stack**.

At the base is the **capability layer**: what can be mobilized? This includes assets, models, data, infrastructure, human expertise, partners, and specialized tools. M&A, alliances, and internal investment shape this layer.

Above it is the **interface layer**: how do capabilities connect? APIs, standards, protocols, contracts, data-sharing rules, identity systems, and platform interfaces determine whether capabilities can interact quickly and reliably.

The third is the **agent layer**: who acts? These actors may include human decision-makers, firm agents, customer agents, supplier agents, bidding agents, risk agents, logistics agents, and service agents. Increasingly, they are autonomous or semi-autonomous systems acting within defined objectives.

The fourth is the **coordination layer**: how are actions synchronized? Matching, routing, bidding, ranking, approval, authentication, escalation, and settlement mechanisms determine how multiple actors move from interaction to outcome.

The fifth is the **competition layer**: how is value won or lost? Prediction accuracy, pricing, latency, trust, risk assessment, personalization, and prioritization determine which agent or configuration prevails.

The sixth is the **governance layer**: what keeps the swarm legitimate? Rules, constraints, accountability, auditability, fairness, security, and intervention rights determine whether swarm interactions remain trusted and aligned.

This stack clarifies why swarm advantage is not reducible to one capability. A firm may own valuable assets but lack interfaces that allow them to connect. It may have powerful agents but weak governance. It may participate in ecosystems but fail to win in the real-time dynamics where value is actually captured.

Where Swarms Create Advantage

Swarms create advantage in several ways.

The first is **selection advantage**: being included in the right swarm at the right moment. In many digital environments, value begins with eligibility. If a firm's agents, data, products, or services are not selected into the relevant interaction, they cannot compete for the outcome.

The second is **prediction advantage**: understanding the value, risk, or probability of an interaction better than others. In advertising, this means predicting which impression is worth bidding for. In payments, it means distinguishing legitimate transactions from fraud without damaging customer experience. In logistics, it means predicting disruptions before they cascade.

The third is **coordination advantage**: enabling multiple actors to act together faster and more reliably. Firms that design better interfaces, protocols, and orchestration mechanisms can make their capabilities easier to combine.

The fourth is **latency advantage**: acting quickly enough to matter. In swarm environments, advantage often depends on milliseconds. A better prediction that arrives too late may be useless.

The fifth is **trust advantage**: being considered safe, reliable, compliant, and fair enough to participate. As AI agents proliferate, firms will not only compete on speed and intelligence. They will compete on whether other actors trust their agents, data, and decisions.

A sixth advantage — and one that multiplies all the others — is **brokerage position**: competing across ecosystems, not just within them.

The most powerful swarm competitors are not those embedded deeply in a single ecosystem. They are those that bridge multiple ecosystems simultaneously. A firm that participates in advertising, logistics, payments, and cloud infrastructure at the same time does not merely have four separate competitive positions. It has something far more valuable: the ability to assemble swarm configurations that draw on all four simultaneously, creating combinations that any competitor anchored in a single ecosystem simply cannot replicate.

This brokerage advantage *multiplies* each of the five advantages described above. A broker firm has more selection options because it can recruit swarm participants from a larger and more varied pool. Its prediction improves because it draws on information signals from multiple ecosystem networks simultaneously. Its coordination is stronger because it understands the protocols of several communities, not just one. Its latency advantage compounds because capabilities can be prepositioned across multiple systems. And its trust advantage extends because it can offer reliability and compliance across more contexts than single-ecosystem rivals.

Amazon, Google, and Microsoft build across such a wide range of ecosystems not only for diversification. The deeper logic is brokerage: the ability to connect what would otherwise be disconnected, and to assemble swarm configurations that no competitor confined to narrower ecosystem boundaries can match. Building cross-ecosystem presence requires deliberate investment — in interfaces, data partnerships, platform participation, and governance arrangements across multiple environments. But the firms that make those investments gain a compounding swarm advantage that is extraordinarily difficult to replicate from a standing start.

These advantages are related to learning, but they are not the same as learning power. Learning power explains how firms improve over time. Swarm advantage explains how firms win in specific moments of multi-firm interaction. A firm may learn quickly and still fail to be selected into the right swarm. It may have strong data but weak interfaces. It may have intelligent agents that other participants do not trust.

Governing Swarms

Swarms require governance because they operate across organizational boundaries. No single firm controls every participant, model, data flow, rule, or objective.

Governance therefore shifts from internal control to protocol design. Leaders must ask: Who can participate? What data can be used? Which agents are authorized to act? How are disputes resolved? When must agents escalate to humans? Which outcomes are unacceptable? How are failures contained?

This governance challenge has echoes in an older strategic problem: governing multilateral alliances, where three or more firms cooperate and compete at the same time. That literature identified a fundamental insight: when no single authority can impose decisions, effective governance requires *pre-agreed procedural rules* — not agreements about specific outcomes, but agreements about *how* decisions will be made when interests diverge. Who decides? How are disputes resolved? How is value divided when contribution is unclear? These questions predate swarms. Swarms intensify them in three ways. First, participants now include AI agents as well as human managers. Second, interactions happen in milliseconds, not over months of negotiation. Third, configurations assemble and dissolve dynamically, making fixed governance arrangements inadequate.

The implication is that swarm governance cannot rely on the negotiated adjustments that managed multilateral alliances. It must be encoded in technical protocols and algorithmic rules that execute in real time. The firms that design those protocols — and that shape who can participate, on what terms, and accountable to what standards — will shape the distribution of value in swarm competition just as platform designers shaped value distribution in the previous era.

This differs from governing learning within a single firm. In swarms, the issue is not simply whether a system learns in the right direction. It is whether partially autonomous actors can interact safely and productively across boundaries.

Digital advertising provides one example. The system depends on auction rules, privacy constraints, identity mechanisms, measurement standards, and fraud detection. Payments provide another. Card networks and processors depend on authorization standards, dispute processes, risk controls, and compliance requirements. Logistics ecosystems depend on data-sharing protocols, routing rules, capacity commitments, and service-level standards.

In each case, governance is not an afterthought. It is part of the competitive architecture. The firms that shape the rules of interaction often shape the distribution of value.

Leadership in the Age of Swarms

The rise of swarms changes what leaders must design.

First, leaders must build **capability optionality**. Firms need access to capabilities that may be required in future swarms, even if the exact configuration is unknown. This may involve acquisitions, alliances, data partnerships, cloud infrastructure, AI models, or specialized human expertise.

Second, they must invest in **interoperability**. Capabilities create little value if they cannot connect. APIs, standards, data architecture, trust frameworks, and governance protocols become strategic assets.

Third, they must improve **agent quality**. As AI agents become participants in competition, firms must ask whether their agents are better at predicting, bidding, routing, negotiating, approving, rejecting, or escalating than those of competitors.

Fourth, leaders must shape **participation rules**. In ecosystems, advantage often comes from influencing who can join, what counts as valid contribution, how conflicts are resolved, and how value is distributed.

Fifth, they must secure **governance rights**. The ability to audit, constrain, explain, or override swarm behavior will become increasingly important as regulators, customers, and partners demand accountability.

This shifts leadership from managing relationships to designing systems of interaction. Alliances still require trust. Ecosystems still require orchestration. But swarms require something more: the ability to compete and collaborate through real-time, agent-mediated configurations that no single firm fully controls.

From Deals to Systems

For decades, strategy was built around durable choices: what to own, whom to partner with, where to position the firm, and how to defend advantage. Those choices remain important. But they are no longer sufficient.

In AI-enabled environments, value is increasingly created inside dynamic systems of interaction. M&A and alliances determine what capabilities firms can access. Ecosystems determine where those capabilities can interact. Swarms determine how those capabilities actually create and capture value in real time.

This changes the logic of competition. A firm can have strong alliances but weak swarm participation. It can belong to an attractive ecosystem but fail to win the critical interactions within it. It can own powerful capabilities but lack the interfaces, agents, or governance mechanisms needed to mobilize them at speed.

The question of strategy is no longer only:

Who should we compete with? Who should we collaborate with?

It is also:

How do we design a system in which capabilities, ecosystems, and agentic interactions continuously align in real time to create and capture value?

Conclusion: Strategy in Three Layers

For decades, strategy has been built on structure. Firms shaped competition through ownership, alliances, and positioning within ecosystems. These decisions defined what capabilities existed and how firms were connected.

That logic still matters. But it is no longer enough. In AI-enabled environments, advantage is determined by how firms align three distinct but interdependent layers:capability bundle, context, and dynamics. M&A and alliances shape the capability bundle by defining what capabilities the firm owns or can access. Ecosystems provide the context by creating environments in which those capabilities can interact. Swarms determine outcomes by assembling and deploying those capabilities in real time.

What has changed is not just the emergence of swarms. It is that they operate within ecosystems that are themselves in motion. Capability bundle defines potential. Ecosystems define possibility. Swarms determine outcomes.

Advantage no longer comes from occupying a stable position within a fixed system. It comes from the ability to align capability bundle, context, and dynamics continuously, across ecosystems that evolve and interactions that unfold at machine speed.

From alliances to swarms, strategy is no longer only about managing relationships. It is about mastering the interplay between durable capabilities, fluid ecosystems, and real-time agentic dynamics.