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SPOTLIGHT ON THE SECRETS OF GREAT TEAMS

Teamwork On the Fly

How to master the new art of teaming

by Amy C. Edmondson

Spotlight

ARTWORK Andy Gilmore, *Hemicube*
2011, digital drawing

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Teamwork On the Fly

IF YOU WATCHED the Beijing 2008 Olympic Games, you probably marveled at the Water Cube: that magnificent 340,000-square-foot box framed in steel and covered with semitransparent, eco-efficient blue bubbles. Formally named the Beijing National Aquatics Center, the Water Cube hosted swimming and diving events, could hold 17,000 spectators, won prestigious engineering and design awards, and cost an estimated 10.2 billion yuan. The structure was the joint effort of global design and engineering company Arup, PTW Architects, the China State Construction Engineering Corporation (CSCEC), China Construction Design International, and dozens of contractors and consultants. The goal was clear: Build an iconic structure to reflect Chinese culture, integrate with the site, and minimize energy

consumption—on time and within budget. But how to do all that was less clear.

Ultimately, Tristram Carfrae, an Arup structural engineer based in Sydney, corralled dozens of people from 20 disciplines and four countries to win the competition and deliver the building. This required more than traditional project management. Success depended on bridging dramatically different national, organizational, and occupational cultures to collaborate in fluid groupings that emerged and dissolved in response to needs that were identified as the work progressed.

The Water Cube was an unusual endeavor, but the strategy employed to complete it—a strategy I call *teaming*—epitomizes the new era of business. Teaming is teamwork on the fly: a pickup basketball game rather than plays run by a team that has trained as a unit for years. It's a way to gather experts in temporary groups to solve problems they're encountering for the first and perhaps only time. Think of clinicians in an emergency room, who convene quickly to solve a specific patient problem and then move on to address other cases with different colleagues, compared with a surgical team that performs the same procedure under highly controlled conditions day after day. When companies need to accomplish something that hasn't been done before, and might not be done again, traditional team structures aren't practical. It's just not possible to identify the right skills and knowledge in advance and to trust that circumstances will not change. Under those conditions, a leader's emphasis has to shift from composing and managing teams to inspiring and enabling teaming.

Stable teams of people who have learned over time to work well together can be powerful tools. But given the speed of change, the intensity of market competition, and the unpredictability of customers' needs today, there often isn't enough time to build that kind of team. Instead, organizations increasingly must bring together not only their own far-flung employees from various disciplines and divisions but also external specialists and stakeholders, only to disband them when they've achieved their goal or when a new opportunity arises. More and more people in nearly every industry and type of company are now working on multiple teams that vary in duration, have a constantly shifting membership, and pursue moving targets. Product design, patient care, strategy development, pharmaceutical research, and rescue operations are just a few of the domains in which teaming is essential.

This evolution of teamwork presents serious challenges. In fact, it can lead to chaos. But employees and organizations that learn how to team well—by embracing several project management and team leadership principles—can reap important benefits. Teaming helps individuals acquire knowledge, skills, and networks. And it lets companies accelerate the delivery of current products and services while responding quickly to new opportunities. Teaming is a way to get work done while figuring out how to do it better; it's executing and learning at the same time.

To build the Water Cube for the Beijing Olympics, dozens of people from 20 disciplines and four countries collaborated in fluid groupings.

PHOTOGRAPHY: GETTY IMAGES

Idea in Brief

In today's fast-moving, ultracompetitive global business environment, you can't rely on stable teams to get the work done. Instead, you need "teaming."

Teaming is flexible teamwork. It's a way to gather experts from far-flung divisions and disciplines into temporary groups to tackle unexpected problems and identify emerging opportunities. It's happening now in nearly every industry and type of company.

To "team" well, employees and organizations must embrace principles of **project management**—such as scoping out the project, structuring the group, and sorting tasks by level of interdependence—and of **team leadership,** such as emphasizing purpose, building psychological safety, and embracing failure and conflict.

Those who master teaming will reap benefits. Teaming allows individuals to acquire knowledge, skills, and networks, and it lets companies accelerate the delivery of current offerings while responding quickly to new challenges. Teaming is a way to get work done while figuring out how to do it better.

From Teams to Teaming

The stable project teams we grew up with still work beautifully in many contexts. By pulling together the right people with the right combination of skills and training and giving them time to build trust, companies can accomplish big things. For instance, traditional teams at Simmons Bedding Company in the early 2000s achieved a major turnaround by driving waste out of operations, energizing sales, and building better relationships with dealers. In those teams, membership was clearly defined, each group knew which part of the operation it was responsible for, and no one had to do fundamentally new types of work. These stable teams left a trail of positive indicators, including savings of $21 million in operational costs without layoffs in the first year alone; increased sales and customer satisfaction; and dramatically improved employee morale. But Simmons had what many companies today lack: reasonably stable customer preferences, purely domestic operations, and no significant boundaries that had to be crossed to get the job done.

Situations that call for teaming are, by contrast, complex and uncertain, full of unexpected events that require rapid changes in course. No two projects are alike, so people must get up to speed quickly on brand-new topics, again and again. Because solutions can come from anywhere, team members do, too. As a result, teaming requires people to cross boundaries, which can be risky. Experts from different functions—operating with their own jargon, norms, and knowledge—often clash. People who aren't from the same division or organization can have competing values and priorities. When junior and senior staff members from different divisions are paired, reporting structures and hierarchies often silence dissent. On global teams, time zone differences and electronic correspondence can give rise to miscommunication and logistical snafus. And because the work relationships are temporary, investing the time to grow accustomed to new colleagues' work styles, strengths, and weaknesses isn't possible.

Disagreements were plentiful in designing the Water Cube, given the need for intense collaboration across boundaries. Early on, two architecture firms—one Chinese and one Australian—each developed a design concept. One was a wave-shaped structure, and the other was an eroded rectangular form. A participant recalled tension between what felt like two camps. Another added, "It was like two design processes were going on at the same time. One team was working secretly on its idea, and the other architects were doing their own thing."

Consider also a geographically distributed product development team I studied in a high-tech materials company. Working to develop a custom polymer for a Japanese manufacturer's new-product launch, the group nearly broke down over conflicting cultural norms about customer relationships. One team member, a U.S.-based marketing expert, wanted data on the manufacturer's market strategy to assess the longer-term opportunity for the polymer; she was deeply frustrated by a Japanese team member's failure to fulfill her request. In turn, the Japanese team member, an engineer, thought the U.S. marketer was pushy and unsupportive. She knew that the customer had not yet established a strategy for the product and that demanding more information at this stage in the nascent relationship would cause the customer to "lose face."

At the same company, another team of seven experts spread across five facilities on three continents was trying to develop a different polymer on an aggressive timetable. In spite of its combined knowledge, the group reached a dead end in an effort to source a specialized compound. One member eventually found a colleague from outside the formal team who could produce it. In technologically and scientifically complex projects like this one, teaming occurs not just across the boundaries

it was designed to span but also across boundaries between projects, when colleagues with expertise and goodwill help out.

As these brief examples illustrate, teaming involves both technical and interpersonal challenges. It therefore falls to leaders to draw on best practices of project management (to plan and execute in a complex and changing environment) and team leadership (to foster collaboration in shifting groups that will be inherently prone to conflict). This is the hardware and the software of teaming. Let's tackle the hardware first.

The Hardware

To facilitate effective teaming, leaders need to manage the technical issues of *scoping* out the challenge, lightly *structuring* the boundaries, and *sorting* tasks for execution. A classic error is assuming that everything a team does has to be collaborative. Instead, input and interaction should be used as needed so that not all tasks become team encounters, which are time-consuming. Another error is subjecting highly uncertain initiatives to traditional project management tools that cope with complexity by dividing work into predictable phases such as initiation, planning, execution, completion, and monitoring. The hardware of teaming modifies those tools to enable execution during, rather than after, learning and planning.

Scoping. The first step in any teaming scenario is to draw a line in the (shifting) sand by scoping out the challenge, determining what expertise is needed, tapping collaborators, and outlining roles and responsibilities. Leaders of the Water Cube project, for example, started by identifying a handful of Pacific Rim firms that were capable of state-of-the-art engineering and design and willing to work together. In other organizations, this scouting activity might involve lateral and vertical searches through the hierarchy to identify people with relevant expertise.

The Rewards of Teaming

The most challenging attributes of teaming can also yield big organizational and individual benefits.

Multiple functions must work together	People are geographically dispersed	Relationships are temporary	No two projects are alike	The work can be uncertain and chaotic
CHALLENGES				
Conflict can arise among people with differing values, norms, jargon, and expertise.	Time zone differences and electronic communication present logistical hurdles.	People may not have time to build trust and mutual understanding.	Individuals must get up to speed on brand-new topics quickly, again and again.	Fluid situations require constant communication and coordination.
BENEFITS				
ORGANIZATIONAL Innovation from combining skills and perspectives Ability to solve cross-disciplinary problems INDIVIDUAL Boundary-spanning skills Understanding of other disciplines Broader perspective on the business	ORGANIZATIONAL Greater alignment across divisions Better diffusion of the company's culture INDIVIDUAL Familiarity with people in different locations Deeper understanding of different cultures and of the organization's operations	ORGANIZATIONAL More shared experience among colleagues Greater camaraderie across the company INDIVIDUAL Interpersonal skills Extensive network of collaborators	ORGANIZATIONAL Ability to meet changing customer needs INDIVIDUAL Flexibility and agility Ability to import ideas from one context to another	ORGANIZATIONAL Ability to manage unexpected events INDIVIDUAL Project management skills Experimentation skills

When a team is already assembled, scoping includes figuring out what additional resources are needed, as occurred in the second polymer team, or which team members can be freed up over time to join other groups. Successful scoping articulates the best possible current definition of the work and acknowledges that the definition will evolve along with the project.

Structuring. The second step is to offer some structure—figurative scaffolding—to help the team function effectively. In building, a scaffold is a light, temporary structure that supports the process of construction. For improvisational, interdependent work carried out by a shifting mix of participants, some structuring can help the group by establishing boundaries and targets. Scaffolding in a teaming situation could include a list of team members that contains pertinent biographical and professional information; a shared radio frequency, chat room, or intranet; visits to teammates' facilities; or temporary shared office space. The use of "shirts" and "skins" to designate sides in a pickup basketball game is a kind of scaffold, as is a quick briefing at the launch of a rescue mission that assigns, say, groups of four people, each with a different role, to head in three different directions. The objective of structuring is to make it easier for teaming partners to coordinate and communicate—face-to-face or virtually.

Melissa Valentine, a doctoral candidate at Harvard University, and I recently looked at the use of figurative scaffolds in emergency rooms, where fast-paced teaming has life-or-death consequences. In this setting, physicians, nurses, and technicians with constantly varying schedules depend on one another to make good patient care decisions and execute them flawlessly in real time. More often than not, people scheduled on the same shift do not have long-standing work relationships and may not even know one another's names. Valentine and I found several hospitals that were experimenting with a system to make ad hoc collaboration easier by dividing ERs into subsections ("pods") incorporating a preset mix of roles (such as an attending physician, three nurses, a resident, and an intern) into which clinicians slide when they come to work. As a result, the teaming arrangement for each shift is established early on, which reduces coordination time, boosts accountability, improves operational efficiency, and shortens patient waits.

Temporary colocation is a common type of scaffold for high-priority, short-term projects in corporate settings. Motorola used this for one of the most successful product launches in history: the RAZR mobile phone. Battling fierce global competition in 2003, the company set out to create the thinnest phone ever in record time. Roger Jellicoe, an electrical engineer, led the project, in which 20 engineers and other experts from various groups and locations temporarily worked side by side in an otherwise unremarkable facility an hour from Chicago. The resulting product, introduced in 2004, was a stunning market success: More than 110 million RAZRs were sold in the first four years.

Sorting. The third step is the conscious prioritizing of tasks according to the degree of interdependence among individuals. As the organizational theorist James Thompson noted a half century ago, organizations exist to combine people's efforts. Combining, or interdependence, can take three forms: pooled, sequential, or reciprocal. *Pooled* interdependence was the very essence of the industrial era—breaking work down into small tasks that could be done and monitored individually, without input from others. To the extent that such work exists in current projects, there's flexibility in when and where it gets done. But most tasks now require some degree of interaction among individuals or subgroups.

Sequential interdependence characterizes tasks that need input (information, material, or both) from someone else. The assembly line is the classic example: Unless the guy upstream does his part, I cannot do mine. Teaming situations are full of these tasks; they must be scheduled carefully to avoid delays. Effective teaming streamlines handoffs between sequential tasks to avoid wasted time and miscommunication. Too often, people focus on their own part of the work and assume that if others do likewise, that will be sufficient for good performance.

The management of tasks involving *reciprocal* interdependence—work that calls for back-and-forth communication and mutual adjustment—is most critical to successful teaming. Because it's often difficult for people in cross-functional, fluid groups to reach consensus, these tasks tend to become bottlenecks. They should therefore be prioritized. It's crucial that leaders specify points when individuals or subgroups must gather—literally or virtually—to coordinate upcoming decisions and resources or to analyze and solve problems.

One factor that distinguished the design and construction of the Water Cube from most large-scale

Conflict among collaborators can feel like a failure, but differences in perspective are a core reason for teamwork in the first place, and resolving them effectively creates opportunities.

building projects—in which different tasks are performed sequentially by different disciplines—was that all the experts came together at the beginning to brainstorm and consider the implications of various design ideas. This decision about process deliberately converted traditionally sequential activities into reciprocal ones. The result was greater complexity and more need for coordination but also better design, less waste, quicker completion, and lower cost. One outcome was the radical decision to use ethylene tetrafluoroethylene (ETFE), a material that had been developed for space exploration but never used in a major building. Its unique properties solved several acoustic, structural, and lighting problems, and although the choice initially appeared risky, Arup engineers used the latest computer modeling software to confirm the safety of ETFE for their purposes and to communicate their thinking to the Chinese authorities.

Of course not all tasks in the Water Cube project required reciprocal interdependence. Expert subgroups had many independent tasks, such as fire safety analyses and certain technical drawings. But for interdependent work, groups had to coordinate across what the company called "interfaces." Carfrae and his colleagues divided the entire project into "volumes" (separable parts) on the basis of areas of interdependence and assigned subteams to carry them out. When issues required coordination across volumes, interface coordination meetings were held—for just the relevant parties—to manage the structural, organizational, or procedural boundaries. In this way, the project eliminated mistakes that might otherwise occur at such boundaries—saving materials, costs, and headaches.

The Software

The hardware of teaming rarely works smoothly unless the software is thoughtfully managed as well. (See the sidebar "The Behaviors of Successful Teaming.") One challenge of any kind of teamwork is that people working together are more vulnerable to the effects of others' decisions and actions than people working independently. Stable teams overcome this by giving members time to get to know and trust one another, which makes it easier to speak up, listen closely, and interact fluidly. But constantly shifting relationships heighten the challenge. The software of teaming asks people to get comfortable with a new way of working rather than with a new set of colleagues. This new way of working requires them to act as if they trust one another—even though they don't. Of course they don't; they don't yet know one another. Leaders have at their disposal four software tools: emphasizing purpose, building psychological safety, embracing failure, and putting conflict to work.

Emphasizing purpose. Articulating what's at stake is a basic leadership tool for motivation in almost any setting, but it's particularly important in contexts that require teaming. Purpose is fundamentally about shared values; it answers the question why we (this company, this project) exist, which can galvanize even the most diverse, amorphous team. Emphasizing purpose is necessary even when the purpose is obvious, such as in the historic 70-day rescue operation of 33 Chilean miners in 2010. Andre Sougarret, the senior engineer at the Codelco mining company who led the complex rescue, constantly reminded the dozens of engineers and geologists teaming with him about the human lives they were trying to save. This helped experts from disparate disciplines, companies, and countries quickly resolve disagreements and support one another instead of competing to come up with the idea that would save the day. Jellicoe and the Motorola RAZR team emphasized producing a groundbreaking product that would be beautiful as well as practical, while the polymer developers had a mandate to satisfy their customers' needs as quickly and effectively as they could.

Building psychological safety. In fast-paced, cross-disciplinary, cross-border teaming situations, it's not necessarily easy for people to rapidly share relevant information about their ideas and expertise. Some people worry about what others will think of them. Some fear that they will be less valuable if they give away what they know. Others are reluctant to show off. Even receiving knowledge can be difficult if it feels like an admission of weakness.

Because these vital interpersonal exchanges don't always happen spontaneously, leaders must facilitate them by creating a climate of psychological safety in which it's expected that people will speak up and disagree. A basic way to create such a climate is to model the behaviors on which teaming depends: asking thoughtful questions, acknowledging ignorance about a topic or area of expertise, and conveying awareness of one's own fallibility. Leaders who act this way make it safer for everyone else to do so. To establish a psychologically safe environment for the rescue operation in Chile, Sougarret shielded everyone involved from the media, asked questions and listened carefully to people regardless of rank, and demonstrated deep interest in new ideas about how to save the miners. In the Water Cube project, Carfrae created what team members referred to as a "safe design environment" by reinforcing the need to experiment with wild ideas.

Embracing failure. Teaming necessarily leads to failures, even on the way to extraordinary successes. These failures provide essential information that guides the next steps, creating an imperative to learn from them.

In teaming situations, leaders must ensure that all participants get over their natural desire to avoid the embarrassment and loss of confidence associated with making mistakes. The RAZR team confronted failure when, despite long working hours, it missed its ambitious deadline and the associated holiday sales. Fully supported by senior management, the team launched a few months later, and the phone's sales still surpassed expectations. The first polymer team described above undertook a series of experiments that went nowhere and ultimately brought in some specialists, confident that those colleagues would not think less of them. Teaming is needed for just those kinds of situations—when the people responsible for implementing solutions are not necessarily the ones who can come up with them.

Putting conflict to work. When teaming occurs across diverse cultures, priorities, or values, progress-thwarting conflicts are common—even when leaders have done all the right things. To move forward, all parties must be pushed to consider the degree to which their positions reflect not just facts but also personal values and biases, to explain how they have arrived at their views, and to express interest in one another's analytic journeys. In this way, people can put conflict to good use.

As Chris Argyris wrote in the HBR article "Teaching Smart People How to Learn" (May 1991), learning from conflict requires us to balance our natural tendency toward advocacy (explaining, communicating, teaching) with a less spontaneous behavior: inquiry (expressions of curiosity followed by genuine listening). A useful discipline for leaders is to force moments of reflection, asking themselves and then others, "Is this the only way to see the situation? What might I be missing?" Such exploration—even in the face of deadlines—is critical to successful teaming. In fact, in my research and consulting I've found that "taking the time" to do this actually takes less time than allowing conflicts to follow their natural course.

Conflict can feel like a failure. It can be frustrating not to see eye-to-eye with collaborators, but differences of perspective are a core reason for teamwork in the first place, and resolving them effectively gives rise to new opportunities. Instead of parting ways when they disagreed about the design for the Olympic aquatics center, the Chinese and Australian designers came up with a brand-new concept that excited both sides. Would either of their original design concepts have won the competition? We can't answer that, but the new, shared solution—the Water Cube—was spectacular. Project leaders facilitated this successful outcome by assigning those rare specialists who had deep familiarity with both Chinese and Western culture to spend time in each other's firms helping to bridge differences in language, norms, practices, and expectations.

Challenges Bring Benefits

Having studied the evolution of teamwork for 20 years, I believe that teaming is not just something individuals and companies have to do now but something they should want to do now, because it's an important driver of personal and organizational development.

When managed effectively, teaming can generate not only amazing short-term results, as illustrated by the RAZR and the Water Cube, but also long-term dividends. (See the exhibit "The Rewards

Speaking Up

Communicating honestly and directly with others by asking questions, acknowledging errors, raising issues, and explaining ideas

Experimenting

Taking an iterative approach to action that recognizes the novelty and uncertainty inherent in interactions between individuals and in the possibilities and plans they develop

Reflecting

Observing, questioning, and discussing processes and outcomes on a consistent basis—daily, weekly, monthly—that reflects the rhythm of the work

Listening Intently

Working hard to understand the knowledge, expertise, ideas, and opinions of others

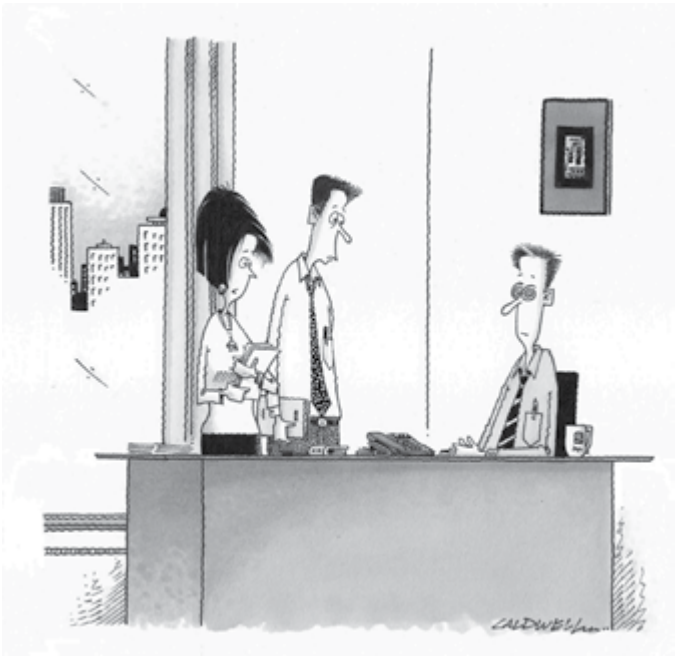
Integrating

Synthesizing different facts and points of view to create new possibilities

Organizations that team well are nimble and innovative. They execute while they're learning on multiple fronts.

of Teaming.") Organizations that learn to team well become nimbler and more innovative. They are able to solve complex, cross-disciplinary problems, align divisions and employees by developing stronger and more-unified corporate cultures, deliver a wide variety of products and services, and manage unexpected events. Teaming helps companies execute even as they learn on multiple fronts, which in turn leads to improved execution.

Individuals also benefit from serial teaming, developing broader knowledge, better interpersonal skills, a bigger network of potential collaborators, and a better understanding of their company and the different cultures at work in it. In a study of product development teams, my colleagues and I found that people who had worked on teams with greater task novelty and product complexity, more-diverse colleagues, and more boundary spanning learned more than people on teams that faced fewer of those challenges.



"Let's come back later. It looks like he's still buffering."

CARTOON: JOHN CALDWELL

The multinational food company Group Danone believes so strongly in the power of teaming that the company has institutionalized it in the form of Networking Attitude, a program initiated by the executives Franck Mougin and Benedikt Benenati. It encourages ad hoc projects involving employees spread across hundreds of business units that previously operated independently, with little or no cross-pollination. Using a mix of face-to-face "knowledge marketplaces" and electronically mediated discussions, managers with an interest in a particular issue, brand, or problem can find partners with whom to share practices and launch new initiatives. An internal report featured stories of 33 practices transferred across sites, from which the company expects new teams and projects to bubble up. One initiative involved a dessert Danone Brazil helped Danone France launch in under three months in response to a competitor's move; it became a €20 million business. The company now has more than 60 new "networks"—porous communities of teaming colleagues—around the globe. Networking Attitude was designed to produce business successes, and it did. But, just as important, it shifted a culture of localized, hierarchical decision making to one of horizontal collaboration.

TEAMING IS MORE CHAOTIC than traditional teamwork, but it is here to stay. Projects increasingly require information and process sophistication from many fields. And managers are dependent on all kinds of specialists to make decisions and get work done. To excel in a complex and uncertain business environment, people need to work together in new and unpredictable ways. That's why successful teaming starts with an embrace of the unknown and a commitment to learning that drives employees to absorb, and sometimes create, new knowledge while executing.

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