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Chapter 25
Pluralistic Coordination

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ABSTRACT

Two questions are examined. Why is coordination hard to achieve when teams are diverse? Are there conditions under which players of MMOGs can learn skills of effective coordination and transfer these skills to real teams? A pluralistic network is a social system in which people are committed to working together effectively despite cultural differences. A core set of eight practices enables a network to be pluralistic. An experiment with the World of Warcraft game confirmed that the game can significantly accelerate learning of those practices. To enable the skills to be transferred to the real world, the game must be augmented with a reflective learning environment.

WHAT THIS CHAPTER WILL DO

We will examine two questions. Why is coordination hard to achieve when teams are diverse? Are there conditions under which players of massive multiplayer online (MMO) games can learn skills of effective coordination and transfer these skills to real teams?

Many coordination breakdowns can be traced to inability to work well with people of different cultural backgrounds, belief systems, and value sets. Even when well-intentioned parties try to avoid these breakdowns by spelling out expectations toward their common goals in detail, the breakdowns persist. We will offer a vision of "pluralistic networks" in which people of diverse backgrounds can work together effectively. We will argue that there are universal practices of effective coordination in pluralistic networks. We will describe those practices and suggest ways to cultivate and learn them.

In anticipation of developing an education program for pluralistic coordination practices, we conducted pilot experiments with one of the most successful MMO games today, World of Warcraft (WOW). We tested the possibility of

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using the WOW game environment to support learning universal coordination skills. We have found that, with a well-designed external context of learning and reflecting on in-game experiences, it is possible for players to overcome their geographical or cultural differences and improve their coordination skills, both in the game and in the real world.

We also concluded that MMO games alone, at least in their current versions, are not enough to produce this result. However, when combined with a theoretical framework and guided reflections and discussion, these games can provide a rich and practical environment for learning new coordination skills and practices that will enable people to work more effectively together in today's multicultural world.

THE COORDINATION CHALLENGE

The Internet confronts us with a plurality of values at a level of immediacy unimaginable to previous generations. At work, at play, and at home, we are unavoidably connected to people from all over the world. In organizations large and small, project teams are increasingly virtual, consisting of people in dispersed geographical locations, who have different cultural backgrounds and value systems. To flourish in our world today -- or even just to participate in a meaningful way -- requires the cultivation of a new kind of pluralism. The new pluralism is a mindset that goes far beyond tolerating diversity; it actively engages with others to articulate shared goals and commit to working together to achieve them. The new pluralism requires a new skill set, which we call the *Orchestration of Commitments in Pluralistic Networks*. Our objective in this chapter is to discuss why we need this new kind of pluralism and how to cultivate it in our networks. We are confident that MMO games can be useful tools for developing and cultivating this mindset, when combined with a framework for observing the way we engage with each other and with new practices for more effective engagement.

Coordination is essential for all human beings to work together. It underlies all human social practices. It is how a group acts together as a unity, achieving a purpose that no individual could alone. Business, government, and military organizations exemplify systems of coordination that enable them to make and fulfill offers on a broad scale. These organizations rely on small teams to carry out specific tasks and missions. We will focus here on coordination within small teams.

Despite its being essential, many people find coordination to be a major, sometimes insurmountable, challenge. Coordination breakdowns manifest as miscommunication, misunderstandings, unmet expectations, distrust, blindness, prejudice, lack of sensitivity, ill-timed actions, wasted motion and resources, missed deadlines, and performance-killing bad moods. As a result, coordination breakdowns are usually expensive, wasteful, mission killing, and sometimes life threatening. A plethora of coordination technologies have been offered to overcome these problems and enable virtual teams, but even with those tools coordination breakdowns have become more common as teams become more dispersed. Exquisite coordination, which separates high performance teams from the rest, is an ever more elusive goal.

Missed promises are a simple, but common example of miscoordination. In software, the best 20 percent of all enterprises deliver 80 percent of their originally promised software products on time. The average company, however, achieves on time delivery only 50 percent of the time. The average company is delivering negative consequences to half its customers, who cannot trust its promises (Ebert and Dunke, 2007). Larry Fisher (Fisher, 2009) quotes Charles Spinosa, a principal of Vision Consulting and coauthor on other works (Spinosa, Dreyfus, and Flores, 1997), on the costs of a company's failure to fulfill its promises to its customers. "I ask companies to list their top 10 promises, how many will be fulfilled,

and how many will be fulfilled on time. In the best companies in the world, they say about 60 percent will be fulfilled. In normal companies, it's around 30 percent."

Outsourcing is another sector in which coordination failures have been high, particularly across international boundaries. To reduce costs and compete in international markets, many companies have outsourced some of their functions, such as call centers and software engineering. They have found that managing their outsourced relationships is a much bigger challenge than they anticipated. Despite the best intentions of both parties, and numerous hours negotiating detailed contracts, many of these outsourced relationships fail. For example, 20 percent of software engineering outsourcing contracts are cancelled in the first year, and overall success rate is less than 50% (Ebert and Dunke, 2007). Outsourcing companies complain that their outsourced providers do not meet their cost and service level agreements; and the outsourced providers complain that their customer companies constantly change requirements and leave them unable to earn their projected margins. Journalist Rachel Lebaux quotes Forrester analyst Christine Ferrusi Ross: "The vast majority of outsourcing and offshoring failures stem from mismatched expectations. This can happen if the customer does not provide context or an understanding of precisely how it likes work done, and the outsourcing firm does not ask the right questions." (Lebaux, 2009) But, how does a customer provide the "context or an understanding of precisely how it likes work done" or the oursourcing firm ask the "right questions", if their cultural backgrounds and life experiences are so different that they cannot anticipate what the other party believes or does not believe? We are aware of examples of incredibly long negotiations between the parties, where they tried spell out actions for every contingency -- and yet they always missed something crucial because of cultural differences. As a consequence of these breakdowns, many companies have brought their outsourced activities back home. The challenge is to manage their cross-culture relationship through unforeseen events so that they are both satisfied.

Disaster relief teams also poignantly illustrate the problem. These teams demonstrate some of the highest human aspirations for helping people. When the teams gather, they often encounter systemic inabilities of government and non-government organizations to coordinate well, leading to delayed responses, wasted resources, and additional lost lives. The failures, which often get more newspaper headline space than their successes, have made the cross-cultural coordination issue publicly visible. Examples appeared during the 9/11 attack in New York City, the 2004 tsunami in the Indian Ocean, and the 2005 Hurricane Katrina in the US (Denning, 2006) and, to a lesser extent, in the Haiti earthquake of 2010.

The after-action studies of these incidents called attention to miscoordination problems that made the disaster relief efforts much more difficult and dangerous than they needed to be (Denning, 2006). In the 2004 tsunami, which killed more than 230,000 people along the wide perimeter of the Indian Ocean, foreign militaries that came to help experienced considerable difficulties in bending their rules to enable cooperation with local governments: the local style of town council decision-making clashed with the military style of hierarchical decision-making, and both types of organizations had trouble overcoming their "red tape" to enable information and resource sharing. Those difficulties were named "crossing the civil-military boundary". During the 9/11 attack in New York City, a police helicopter observed one of the towers starting to crumble and issued an evacuation order to the police; but under the overwhelming pressure of the disaster, no one in the police department thought to inform the fire department of the evacuation order. The 9/11 Commission later concluded that many firefighter lives would have been saved had the evacuation order been communicated, and they attributed the breakdown of communication to the cultures of the two departments. Both their cultures taught

them to safeguard departmental information and to give priority to helping their buddies. In the aftermath of Hurricane Katrina in the US in August 2005, the federal and local agencies encountered considerable friction that played havoc with their coordination. The locals resented the attempts by uninformed federal people to take over and run their rescue services, and the federal people resented the lack of willingness to allow them to bring federal resources to the scene. In all these cases, the miscoordination was rooted in people being unable to work with differences in values. In some cases, the differences were international (such as the US Navy and the Indonesian government trying to coordinate), while in others they were simply clashes between different organizational cultures that had no previous encounters.

Disaster relief teams are prone to miscoordination not only because they have to deal with extreme cultural differences, but because they operate under overwhelming stress. Stress can be disabling even for homogenous teams. The tendency of teams to move toward dysfunction under stress deepens disasters, loses wars, and sinks companies. Diverse worldviews exacerbate the stress because they add obstacles to coordination when there is no time to deal with them.

The examples mentioned above -- missed promises, outsourcing, and disaster relief -- are just three of many arenas in which miscoordination is common. Many small teams in business, government, and military also feel pressure from deadlines, competition, and fear of failure; they experience the same coordination problems. The Internet has created such connectivity that people of different cultures regularly come in contact and have to grapple with everything from business deals to collective actions such as trade agreements and reducing carbon usage. Politics have become more polarized at all levels, from the local community to the nation. In every one of these cases, the problem is not distance but clashes among the diverse worldviews of the people who must coordinate.

The difficulties of multi-community cooperation are so common that social scientists have given them a name -- wicked problems (Kuntz and Snowden, 2003; Roberts, 2000, 2001). The distinguishing feature of wicked problems is that while everyone agrees there is an issue, the various groups cannot agree on a definition of a problem to work on or a strategy for solution. Their diverse worldviews and value sets prevent them from coordinating.

The challenge is to find a basis for people to coordinate well and live together well in a diverse world. We believe that, to accomplish this, people need to make a commitment to pluralism. We will return to this shortly after we consider and dispose of two misconceptions about coordination problems: that physical distance is the problem and coordination tools alone are the solution.

PHYSICAL DISTANCE

The Internet is the culmination of technology development that has made most communications instantaneous and negligible-cost. Some people argue that in-person meetings are no longer necessary, that teams can be distributed (virtual), and that misunderstandings can be avoided by rapid communications. Yet, achieving coordination on virtual teams has proved to be very challenging and the Internet communication tools have not alleviated it.

Siebdrat et al report on a study of virtual teams for software development (Siebdrat, Hoegl, and Ernst, 2009). They considered teams of up to nine persons building software systems from multiple locations. They examined the relation between dispersion and effectiveness. Dispersion measures the distance between team members -- co-located teams have no dispersion while teams whose members were in different countries have large dispersion. The authors found a strong correlation between dispersion and effectiveness -- more dispersion meant less effectiveness. For

large dispersions, team members came from different national and corporate cultures; cultural differences among countries and companies are most likely the source of the lost effectiveness on those teams.

While there is a clear correlation between high dispersion and lost effectiveness, it is a mistake to conclude that distance diminishes effectiveness. We believe that cultural differences -- which become more likely when people are in distant locations -- are a major source of the problem. Even when the dispersion is zero, such as on disaster relief teams, cultural differences block people from finding ways to coordinate well. Facilitated processes such as Barrett-Fry Appreciative Inquiry (Barrett and Fry, 2005) and the Straus Method (Straus and Layton, 2002) bring people together to find common ground amidst their differences. The persistence of these differences after the facilitated workshops and summit meetings often blocks action groups from converting their proposed actions into new community practices.

Siebdart et al recommend two aspects of a solution to the effectiveness problem (Siebdrat, Hoegl, and Ernst, 2009). One is "task related" and consists of numerical measures of performance in completing tasks. The rapid and precise feedback helps team members tell when they are off track and need corrections. The other approach is "socio-emotional" and consists of various techniques by team leaders to promote camaraderie, cohesion, trust, and appreciation of differences. We agree that feedback and the promotion of camaraderie, cohesion and trust, appreciation of differences, are critical to the success of diverse and dispersed teams. The challenge is to learn to do this on an on-going basis.

We believe that there are certain universal practices for coordination that can help a diverse and dispersed group people work much more effectively with each other, despite their differences. We will discuss such practices and how to cultivate them shortly.

COORDINATION TECHNOLOGIES

The Internet has been seen as a global system that facilitates coordination as well as information sharing. For years, software developers have collaborated with managers, communication specialists, psychologists, social scientists, and others to devise tools that help people coordinate well, whether or not they are physically distant from one another. Each tool interprets some aspect of coordination as a process and supports the process.

These tools have come to be known collectively as "coordination technologies". They seek to facilitate information sharing, coordination, cooperation, consensus, collaboration, and collective action. They are of three kinds: exchangers, coordinators, and games (Denning, 2009).

Exchangers support the sharing and transfer of information. There are numerous examples including blogs, chat, content streaming, discussion boards, document sharing, email, file servers, instant messaging, photo sharing (e.g., Flickr), remote blackboard, RSS, screen sharing, version control systems, VoIP (voice over IP), and VPN (virtual private network).

Coordinators contain a workflow representation of the network of commitments of a group and a means to observe when participants make new commitments or move existing commitments closer to completion (Winograd and Flores, 1987). There are numerous examples including automatic teller machines (ATMs), auction systems, business process managers, collaboratories, creation nets, discussion forums, Internet protocols, network meetings, newsgroups, online payment systems, operating systems, shopping carts, service oriented architecture (SOA), social networking systems (e.g., MySpace, Facebook, LinkedIn), voting systems, Wikipedia, and workflow managers.

Games are systems of interactions among players seeking to achieve a specified outcome through their play together. The players are free to make individual choices within the game's official rules. Wargaming is a military practice

dating back to the 1800s that allows planners to try out combat strategies before putting them into operation in the field. Many leadership coaches use role-playing business simulations to help people discover their own strengths and weaknesses and to give them a sample experience of new practices (Denning, 2009). Michael Zyda gives numerous examples of games that create virtual worlds for corporate and military training (Zyda 2005). Luis von Ahn discusses entertainment games that have useful side effects in the world (von Ahn, 2006), such as labeling images with realistic keywords to facilitate Internet search.

Byron Reeves and Leighton Read document the huge market of massively multi-player online games (MMOGs) (Reeves and Leighton, 2009). In these games, subscribers assume roles in a virtual world and play inside the practices of that world. Examples include America's Army, Counter-Strike, EVE Online, EverQuest, Flight Simulator, Lineage, Second Life, SimCity, Star Wars Galaxies, training games, and World of Warcraft (WOW). Over 20 million people subscribe to these games. Blizzard Entertainment, the maker of WOW, grosses over $2 billion annually in subscription fees from its 12 million subscribers.

Coordination technologies have generally not produced a higher level of effectiveness with collaboration efforts in the Internet. There are three main reasons. First, many tools labeled "coordination technologies" are really only exchangers and do not directly support coordination practices. Second, many coordinators only support the structure but not the context of coordination, and thus can be misused or misinterpreted by those who do not appreciate the intended context. For example, in the 1980s Action Technologies marketed an email system called "The Coordinator", which was based on the conversation for action discussed by Winograd and Flores (1987); while most groups easily doubled productivity with this tool, a few vocal critics assailed it for being a potential surveillance technology that managers could use to identify unreliable people for dismissal from the workplace. Third, the MMOGs are closed worlds that completely absorb their players; they do not provide any obvious means of exporting useful practices from the game into the real world. Prominent authors see enormous potential for business if the learning from these games can be transferred (Castronova, 2005, 2007; Reeves and Leighton, 2009; Seely-Brown and Thomas 2006, 2008), but that potential is not yet realized.

It is worth noting that one coordination technology -- the collaboratory -- stands out as a qualified success (Bly, 2005). A collaboratory is a network of laboratories that allows participating scientists from many countries to design and conduct remote experiments and to collaborate on their interpretations. The shared practices of science dominate the network and overcome the cultural differences among its members.

THE PLURALISTIC CHALLENGE

Our conclusion is that distance is not the cause of miscoordination and that tools alone are of limited help in achieving coordination amidst diversity of users.

We believe that the solution of coordination problem depends on fostering the ideal of pluralism in our networks. Pluralism has traditionally been seen as a political philosophy in which people of different backgrounds, nationalities, cultures, and belief systems commit to living together, respecting their differences, and collaborating to create value for others. We call a network that has assimilated this philosophy a pluralistic network (Denning, Luzmore, and Flores, 2010).

In a pluralistic network there is (1) mutual respect (2) mutual support, (3) commitment to listen to people past their individual differences, (4) commitment to learning and helping others learn, and (5) a shared sense of fulfilling a larger purpose that adds value to people's lives.

This philosophy of pluralism is not the same as diversity. Diversity generally means people of

different backgrounds coming together. Diversity does not automatically engender practices of living together well. We envision networks in which people have the practices to work well together in spite of their diversity.

The condition we encounter today differs from this ideal in a significant way. Many networks today come together for ad hoc reasons such as disaster relief or desire to form a community around a common interest. Individuals often join these networks with no appreciation of other cultures and no experience in working with them. They easily find themselves in conflict and unable to make their coordination work well. Even if they believe in the pluralistic ideal, they lack the practices needed to work effectively in a pluralistic network.

We can see people struggling all the time to achieve workable agreements across cultural and ethical boundaries. Businesses train their executives and governments their diplomats about how to reach deals despite differences among their cultural norms. How do executives from countries that criminalize bribes close international deals with executives from countries who believe that personal gratuities are normal practice? How much social repartee is needed before mentioning the deal at hand? What words do military leaders choose to gain the cooperation during disaster relief of non-government organizations who distrust the military? How do diplomats seeking international agreements on human rights deal with their differing interpretations of what is a right once they agree on generalities such as "all persons have basic rights"?

Malcolm Gladwell (2008) reports that aviation accident analysts discovered from black box recordings that most accidents were preceded by cockpit silence. Little action and coordination happened in the silence. The silence was most likely to be observed when pilots and co-pilots came from cultures in which questioning authority was taboo. Airlines began offering cross-cultural communication training to their pilots to teach them how to speak up about concerns and assessments in emergencies. As a result cockpit crews coordinated much better in emergencies and significantly reduced deadly crashes.

A major obstacle to coordination is that the ad hoc teams that form inside diversified networks violate the common sense about organizations in a number of ways. Our common sense tells us that a functional organization has a clear chain of command and its members are relatively homogeneous in their beliefs about the purposes and goals of the organization. This tradition, which might be called "hierarchical uniformity", is no longer valid for many groups. Instead, many groups are confronted with what might be called "diversified nonuniformity". Their teams are multicultural, many individual actions under short deadlines are reflexive cultural responses, decision making is distributed, leadership must be earned, performance assessment is purely merit based, in-person meetings are infrequent, resources are insufficient, information is overwhelming, and sensory data are conflicting.

It is no surprise that hastily-formed networks for disaster relief are fertile grounds for miscoordination: they violate the common-sense tradition rather dramatically (Denning, 2006). Participants from hierarchical uniform organizations have little need to practice coordination in pluralistic networks. When they convene in a network, they are unprepared to work together. They discover they do not share the same understandings of purposes and goals, and they cannot reconcile their different values behind their differing understandings.

The hierarchical uniform tradition goes hand in hand with three beliefs about effective teams. One is the notion of "best practices": the leadership finds a "best" way to do something and requires everyone to do it that way. In our experience, this notion is incompatible with pluralistic networks. There is no one "best way" for a diversified team to accomplish its mission. Each team member is likely to have a notion of "best" that differs from most others. The team must adapt and flow with a

constant stream of new possibilities arising from their constant discovery of their differences.

Second is relativism, the notion that all team member worldviews are equally valid and, hence, the common ground and best practice must be found in the absence of universal values. Without getting into the question of universal values, we have found that people from different cultures have similar concerns around the way they coordinate their actions with other people, although their style of expression differs from one culture to another. For example, asking for and receiving binding commitments is a universal concern around coordination, but the style of making requests and promises varies among cultures. Unless the parties see the common structure of coordination, the stylistic differences for basic elements of coordination, such as requests and promises, can appear as insurmountable obstacles.

Third is the notion that a major responsibility of the leader is to set norms and standards for the team. For example, the leader guides the team through the development stages that Bruce Tuckerman called "forming, storming, norming, and performing" (Tuckerman, 1965). This is useful guidance for leaders of relatively homogenous teams. In pluralistic networks, the formation of leadership itself becomes a central concern. The team members do not automatically accept externally-appointed leaders; the leaders must prove themselves and earn their leadership. When there is no externally appointed leader, the team must decide on its own leadership. The possibilities of miscommunication and dramatic mood shifts are constant threats.

In spite of all these difficulties, it is possible to teach people practices that will consistently help them bridge their differences and achieve a pluralistic network in which they coordinate well. We turn now to that discussion.

ORCHESTRATING COMMITMENTS IN PLURALISTIC NETWORKS

Let us hone in on what the skill set for coordination is. It includes these basic abilities:

1. Use language as action to effectively make and coordinate commitments that add value to others.
2. Build trust with others by cultivating the ability to make assessments that facilitate taking care of each other's concerns.
3. Listen for opportunities to bring value to others.
4. Observe and bring to the foreground underlying moods that may help or hinder the ability to act with and listen to others.
5. Respect people's differences.
6. Build strong, effective teams based on the above.

These abilities enable coordination despite diversity -- in other words, pluralistic coordination.

The first skill in the list is the basis for the remaining skills. The approach we take is based on the theoretical work of Fernando Flores beginning in the late 1970s and developed over the years since (Flores, 1979; Tsohatzidis, 2007; Winograd and Flores, 1987). In that work, Flores proposed that we view organizations as sets of human transactions that he labeled "networks of directives and commissives". Directives, such as requests and offers, are spoken acts that seek the person being spoken to perform some action. Commissives are spoken acts where the person being spoken to commits to some future course of action. Flores's theory of management shows how certain speech acts, particularly requests, promises, offers, and declarations, serve as building blocks for activating commitments in organizations. These Speech Acts are a generic and powerful foundation for design, no matter how complex the organizational process. The speech acts are summarized in Table 1.

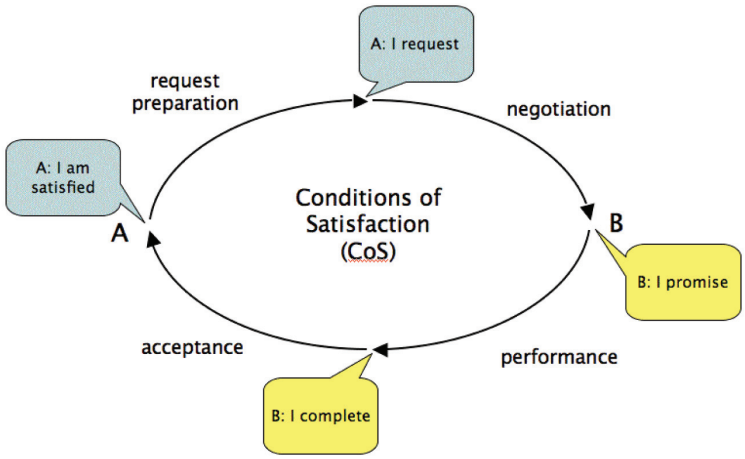
Table 1. Speech acts

Speech Act	Action	Examples	What is produced
Declare	A speaker declares a new world of possibilities for action in a community	"We are founding a new company called IBM that will provide. .. to customers." "We are going to lay off 10% of the staff." "An enterprise is a network of commitments." "We are going to do a new release of World of Warcraft."	Leadership and a new context for action for taking care of the concerns of the community that listens to the declaration and makes it effective
Request	A speaker asks a listener to take care of something that the speaker is concerned about.	"Can you get my a flight to Boston in time for my meeting?" An application for a mortgage conveys a request. Quest: Deliver a letter to Stormwind.	Commitment to action.
Offer/Promise	A speaker offers or promises to take care of something that a listener is concerned about.	"Would you like some dessert?" "I'll prepare a report by next Wednesday on that." "Would you like to form a group that can complete the quest faster?	Commitment to action.
Assess	A speaker assesses how some action or thing relates to specific concerns or commitments.	"We are in a mature industry." "Our customers are happy." "John is impatient." "Our educational system is not adequately preparing our children for the world they live in." "Our costs are increasing." "This dungeon is hard! There are many elite bosses and we need to coordinate well to win!"	Preparation for Action: orientation, interpretations, and attitudes towards actions or situations.
Assert	A speaker reports facts pertinent to the concern at hand.	The meeting was at 4pm PST. The gauge reads 200psi. Our sales were $4.2 million last quarter. My avatar's health is down to 10%.	Confidence that we share a reliable and observable basis for our interpretation of the situation.

Flores and his colleagues amplified what they meant by an organization as a network of commitments by creating the action workflow interpretation of a two-person coordination and showing that the recurrent processes of an organization can be described as networks of these basic building blocks. Figure 1 depicts the basic flow, which is described in the Winograd-Flores book as "conversation for action" (Winograd and Flores, 1987). The key thing is that two parties cooperate to make a condition of satisfaction come true. The parties are shown as A (the customer) and B (the performer). Every two-party transaction consists of four segments, each terminated by a speech act of either the customer (A) or the performer (B). A network forms when A or B make further requests of other people to carry out their parts. In this model A or B can be individuals or organizations.

This structure is universal. People in every culture engage with it every time they coordinate. Cultural styles show up as differences in the way people make the speech acts and in the ways they interpret the Conditions of Satisfaction and the time deadlines for completion. No matter what their cultural backgrounds, when they become observers of the structure, people can facilitate completing the loops. For example, if the other party makes a request by hinting that something would be a good thing, you can often tell it is a request simply because it *feels* internally like a request; they can facilitate the coordination by responding to the request by accepting, declining, asking for clarification, or negotiating. It is im-

Figure 1. Basic coordination loop



portant to note that it is not about using the "right" words. If one gets hung up on details such as whether the other person actually used the word "request", the coordination is likely to fail. Being aware of the structure of coordination and acting accordingly is the central idea.

Because it is universal, this interpretation has great value. People who adopt it guide their interactions to complete all their loops and manage their time. They use it to see coordination breakdowns and take corrective action. They build trust through their improved reliability. Organizations that have practiced this interpretation have experienced significant improvements of productivity, reputation, and morale (Fisher 2009).

The conclusion for our purposes is that framework for action based on the action of language is a powerful access to effective coordination. It does not require years of practice, but can be put in place rapidly. We have extended these basic ideas to teams in pluralistic networks. We turn now to describing those teams and the manner that an MMOG can be helpful in cultivating them.

Building Effective Teams

By adopting practices for coordination of action as outlined above, teams can be more efficient and effective. However, the conversation for action structure is not enough when the teams consist of people from different countries, cultures or value systems. Members of these teams must learn to become aware of rules and traditions that lead them to interpret their commitments differently, and learn to cultivate a space where they can discuss their progress openly with each other and with respect.

As a simple illustration, consider a multi-nation team where everyone has an interest to complete their action loops, but the manner in which each one makes a request or promise may differ across cultures. If they do not see the loops they are working to complete, all sorts of things can go wrong. An intended performer might not hear a customer's words as a request. Customers might not hear the performer's words as a promise. The two of them might have different standards for the completion due time. They will attribute the resulting breakdowns to all sorts of reasons such as incompetence or lack of care, rather than to their incapacity to see and complete their action loops.

Being aware of cultural differences is a good start, but simple awareness is not enough to allow a multi-cultural team to coordinate well. Those differences can appear as insurmountable difficulties that take away hope of a solution. Instead, we need to help the members of the team develop shared practices around their common values. Based on our experience working with teams for many years, we have identified eight areas of practice development that recurrently come into play when people work successfully in a team, regardless of cultural backgrounds or differences in world view.

1. *Proficiency in a practice essential to the team.* Every team values a basic level of expertise, either in themselves, or in others, that helps the team get its job done.
2. *Capacity to articulate a vision of the team's value in the world that others embrace and commit to.* Successful teams value a coherent, compelling story about the future they are committed to producing, and the value that it will bring to others.
3. *Capacity to enter into binding commitments and fulfill them.* Team members value commitments made by others that provide them with the things they need for their work. These commitments are of greatest value when those who make them consider them as binding and deliver what they promise on time.
4. *Capacity to earn trust by careful management of commitments.* People generally value trust. They prefer to work with people whom they consider trustworthy and they desire to be trustworthy themselves.
5. *Capacity to spot and eliminate waste.* Most successful team members value their own time and seek work processes that do not waste their time or resources. Their mood generally goes sour when they see themselves doing redundant, meaningless, or unnecessary work.
6. *Capacity to share on the spot, real-time assessments of performance, for the sake of building and maintaining trust, including disclosures of moods and emotions inspired by the environment and action of the team.* Although it can take time for people to feel comfortable sharing their assessments with each other, a successful team greatly values feedback from others on the team.
7. *Capacity to observe one's own history and how it interacts with the histories of the others on the team.* People value when others respect their traditions and grant them understanding and appreciation based on their traditions.
8. *Capacity to blend, meaning to dynamically align one's intentions, movements, and actions with those of others.* Members of effective teams, appreciate a sense of smooth and effortless coordination in their interactions with other members of their teams.

Our observations of recurrent areas of practice for successful teams are supported by research that suggests that these practices are an essential basis for coordination in multi-cultural networks. For example, James Womack and Daniel Jones promote "lean thinking", a practice of seeing and eliminating waste (Womack and Jones, 1996). Gladwell reports on how airlines discovered that accidents dropped significantly after they put pilots through multicultural communication training (Gladwell, 2008). Multicultural group processes such as the Barrett-Fry Appreciative Inquiry (Barrett and Fry, 2005) and the Straus-Layton method (Straus and Layton, 2002) have been very successful at developing shared interpretation and solidarity in communities seeking solutions to wicked problems. Strozzi-Heckler reports that leadership practices for making assessments and blending have been very effective for teams and groups (Strozzi-Heckler, 2007). Tuomi concluded that loosely formed, volunteer networks of collaboration frequently fall into

practices like these (Tuomi, 2003). Based on our work with numerous teams, we have concluded that these practices are essential, and given the technologies available today, that they can be rapidly implemented by any team, despite their geographic or cultural dispersion.

Experiments

To put this hypothesis to the test, we have conducted some experiments using the World of Warcraft MMO game. We designed these experiments as pilot tests of elements of our education program in orchestrating commitments in pluralistic networks. We chose the WOW game because its core practices emphasize teams working together on quests. With 12 million subscribers from around the world, most in-game teams are almost surely diverse.

While we conducted our experiments mainly as "proof of concept", the results strongly suggest that these practices are valuable for pluralistic coordination and can be rapidly learned in any environment, including MMO game environments.

We also chose WOW in part because our own experience is that the game offers an incredibly rich socio-economic environment that could be used for learning the practices listed earlier. WOW is also garnering serious attention in the business world. John Seely Brown and Douglas Thomas have already brought WOW to the attention of the business community as a possible training ground for leadership (Seely-Brown and Thomas, 2006, 2008). Bryon Reeves and Leighton Read have argued that most of the MMO games can cultivate valuable skills for the modern workplace (Reeves and Leighton, 2009).

Our main experiment was a four-month study to examine whether an MMO game could be used as a learning environment for the core practices listed above. The diversified group consisted of 28 people who did not know each other. They came from about half a dozen countries and varied professional backgrounds. The majority of them had no prior experience with any MMO game, including WOW. They conducted all their exercises and discussions from different locations using a voice communication system that augmented the game.

Within the WOW context, it is possible to define precisely what it means for a small team to be proficient by extending the Dreyfus definitions (Dreyfus, 2004) from individuals to teams. The definitions enable us to measure the progress of teams toward proficiency. The game guides players move gradually up a hierarchy of 80 levels, starting from the novice level 1. Every quest (exercise) in the game is rated for the level of players allowed to undertake it.

Players who reach a sufficient level may team with others in groups for raids into confined areas (called "dungeons") that house powerful denizens (called "bosses") that cannot be defeated by individuals. Successful raids are a measure of a team's coordination proficiency under pressure. We measured team learning proficiency by the number successful raids at each level of difficulty, and by the new actions team members were applying to their daily lives.

Each player satisfied the first practice on the list above by attaining a sufficient game level. We set up general team practices for the remainder of the list. Outside the game the experiment's facilitators led the participants through readings, exercises, and reflective conversations about the key distinctions behind the practices. We anticipated that sharing assessments (practice 6) would be the most uncomfortable for people and paid special attention to it. Facilitators accompanied the teams in-game to monitor their coordination and coach them on their use of the general practices. The facilitator made sure that the team paused periodically to share their moods and honest performance assessments (practice 6); this enabled them to regenerate their shared interpretation of what they were doing.

On completion of each in-game assignment, the teams debriefed in a standard after-action

assessment exercise to critique each other's performances, reflect on their overall effectiveness, and plan new strategies for their next assignment. They also reflected on how the coordination practices they were learning would apply in their real life worlds.

One in-game assignment was to take on a boss so tough that there was no hope for any team to survive; the purpose was to see how the teams handled their moods when faced with an impossible situation. We observed that the teams held a positive, work-together mood when they used the practices. The normal situation in WOW is that when a team "wipes" once or twice the participants simply leave, often without saying good-bye.

We observed that, even after our pre-game instruction in the general practices, the practices caused discomfort to most team members. Even after the first month of working together, many members had difficulties voicing assessments of their teammates. In the second month, however, they turned the corner and learned that sharing performance assessments was progressively easier with practice and they overcame their aversions. By the third month, the regular practice of making these assessments ceased to embarrass or to generate hard feelings, and started to generate trust. Because acting on these assessments significantly improved their team success the teams came to value them. Their mutual respect, solidarity, and team effectiveness improved markedly. By the end of the four months, team members openly wondered why they had not been using these practices in their real-life work. They all reported examples of effective interactions they had with their colleagues at work that they would not have had prior to participating in the experiment.

In the first two months, only one of the six teams achieved solidarity and clear proficiency. We then shuffled the team members into new teams for the next two months. This time, all teams achieved solidarity and proficiency. The success came not from the shuffling, but from the learned universal practices.

The experiment validated our intuition that the general practices foster proficient coordination in diversified teams. We concluded that

- These practices are effective in building effective, trusting teams among dispersed individuals who did not know each other.
- The WOW game provides a very helpful context in which the team members act together to fulfill a common purpose. Our intuition that a synthetic world can be instrumental to the embodied learning of new skills and rapid deployment of new practices was validated by what occurred during our experiment. Rather than acquiring a purely intellectual understanding, team members in this experiment quickly developed awareness of how action happens, and what they needed to do to lead and participate effectively in a team.
- The members learned what got in the way of their success and to have conversations to address these obstacles. They found that their own moods and emotional reactions to stressful situations were often obstacles, and making honest assessments was an effective means to move past the obstacles. By learning these as recurrent practices, they became skillful at assessing progress, making requests to improve the play, and building trust with their teammates.
- With an external structure of debriefs, coaching, and reflection, we were able to transfer the learning within the game back into the real world.

In a parallel experiment, we took the level 80 players in the group on ten-person raids in high-level dungeons. The ten players came from at least four countries and did not know each other. These raids are ruthlessly meritocratic. Only exquisite coordination of the team can defeat the boss. The teams defeated the bosses in half as many tries on

average as experienced players say they normally encounter.

We asked those high-level players to compare their experience on our pluralistic networks team with their experience on other raid teams they participated in. In listening to their responses, we concluded that the diverse, dispersed team was able to work together so well because:

- They experienced and valued the sense of respect and taking-care on our team, which was not present in most of their other raid teams.
- The leader experimented with different leadership styles, ranging from saying little to trying to give detailed instructions to each member. The most effective style was to give a conceptual picture of the winning strategy and let each player learn the best way within that picture. On most other teams, the leader gives poor direction.
- The team had total trust in the leader, who had developed mastery of raids in other teams, and was openly acknowledged in this team as a master. On most other teams, the expertise of the leader is not acknowledged.
- Each player developed an identity not just as a game avatar, but as a real person. On other teams their only identity is their avatar and they guard their personal identities.
- Each player made and respected the commitment to be not offended by mistakes and see them as opportunities for learning. On other teams a person making a mistake can be summarily kicked off the team by the leader.
- The team developed a mood of gratitude, learning, and playfulness that enabled them to master the coordination to defeat the bosses in just a few tries and to repeat with few failures. On other teams it often takes many tries, and the team cannot repeat their successes.
- The players reported that they were able to take these learning to their teams in the real world.

Interpretations of Results

As a result of these experiments, we are more confident than ever that the MMO game, when situated within a larger context of learning, is an effective laboratory. Its greatest value is provocateur of moods and emotions during stressful team actions, which can then be observed and managed by the players within the framework of practice that we provide.

Despite these positive results, we issue a major caution. We do not believe that the MMO games as currently constituted will by themselves produce better managers, leaders, or human beings. We know people who have played these games for thousands of hours. Despite their mastery in the game, they cannot work effectively with others in their real work lives. Often, many of the best players are playing these games to "escape" from reality, not to explore how these games can help them to become more effective in their lives outside of the games. But the games can be a great laboratory for cultivating new practices and pluralistic networks if one has a plan.

The ideal of a pluralistic network demands that we cultivate a self attuned to the network rather than focused solely on our own concerns. The practices we have outlined above for coordination on teams, coupled with frequent reflection with one's teammates, are a start in this direction. Games have not arrived to the point where they can provoke or support this kind of reflection. Charles Taylor (Taylor, 1992, 2007) calls this kind of reflection "strong evaluation" because it deals with the alignment of one's actions with values coming from outside oneself; in this case, from the network. Games are, however, good for provoking the conversation in which we can have this kind of reflection.

It is interesting to note that some movies are capable of provoking this kind of ethical self-reflection about who we are and how we create value in the world. No game yet does this. It is possible the future games will do that, but they have not been designed yet.

While we doubt that leadership skills developed in game easily transport into the external world outside the game without a framework for learning, we note that the games contain technologies that could be exported. The WOW game has hundreds of add-ons that modify the user interface to provide dials and meters that provide situational information immensely useful in defeating bosses. Software for portable devices (such as "iPhone apps") is starting to appear with similar functions. The game provides group-forming tools that make the process of creating a team for a quest ridiculously easy. Tools like that are also starting to appear as add-on software for portable communication devices.

CONCLUSION

The inability to achieve proficient coordination in pluralistic networks is a real problem. It is becoming more of a challenge as the global Internet creates more connections and more opportunities for people to work together across international and business boundaries. Disaster relief and outsourcing experiences have called wide attention to the problem, and have stimulated research into what is needed for coordination in pluralistic networks.

The universal coordination concerns of articulating visions, making and fulfilling commitments, eliminating waste, sharing performance assessments, disclosing moods, observing histories, and blending, underlie an enabling core of general team practices that lead to proficiency at pluralistic coordination. The MMO game environment is a means of engaging teams in complex tasks requiring sophisticated use of these practices in a synthetic world. The game provokes moods and emotional reactions that, during reflection, help develop the "self" needed for pluralistic coordination. The external structure of learning provides a context for reflection that transfers the practices from the game to the world.

In our opinion, we human beings need to better prepare for the explosion of new practices the Internet will produce. Education needs to be transformed to focus more on the network and needs to be focused on effective practice rather than the accumulation of knowledge. It needs to be about being successful in relationships, about how to make offers, how to build trust, and how to cultivate prudence and emotional resilience. The experiments we reported on here show that this can be done.

Learning to work in pluralistic networks is not only possible but necessary. MMO games, such as WOW, provide us with incredible simulated worlds that allow us to learn to work in pluralistic networks within a defined context. The opportunity for us is to use those simulated worlds to introduce people to the practices and skills that will enable them to embody ways of being that are critical in the real world. If we can accomplish this, a large number of people will learn to live and work in pluralistic networks, making our world a much better place.

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