

The 12th International Command and Control Research and Technology Symposium

Adapting C2 to the 21st Century

Newport, RI
June 19-21, 2007

Predicting Group Faultlines in Multicultural C2 Operations

Authors:

Ida Lindgren [STUDENT], Kip Smith, Rego Granlund

Contact information

Ida Lindgren **

Ph.D. Student

Division of Industrial Ergonomics
Department of Mechanical Engineering
Linköping Institute of Technology
SE-58183 Linköping
Sweden
Phone: +46 13 28 1646
Fax: +46 13 28 2579
ida.lindgren@liu.se

Kip Smith

Professor

Division of Industrial Ergonomics
Department of Mechanical Engineering
Linköping Institute of Technology
SE-58183 Linköping
Sweden
Phone: +46 13 28 27 64
Fax: +46 13 28 2579
kip.smith@liu.se

Rego Granlund

Ph.D.

Rationella Datortjänster HB
Muggebo Fridensborg
SE-590 41 Rimforsa
Sweden
Phone: +46 494 205 66
rego.granlund@c3fire.org

** Point of contact

Predicting Group Faultlines in Multicultural C2 Operations

Abstract

We have run laboratory experiments on the impact of multiculturalism and diversity on the initial phase of C2 team formation. Using the C3Fire experimental platform we have emulated the dynamics of a C2 center where a team of four works together to resolve conflicting goals and allocate limited resources. We have found dimensions of diversity that have the potential to split teams into subgroups and impede cohesion and cooperation. These dimensions are defined by the intersection of demographics, values, and culture and not by single attributes (e.g., nationality). The potential to split teams can be explained using the faultline model of group diversity. We illustrate the model with data from four diverse cultural groups. Using the model we can predict why, during the critical initial stage of team formation, multicultural C2 operations are likely to encounter barriers to collaborative decision making. This ability to predict as well as explain the sources of conflicts that may arise in multicultural settings has two pragmatic implications. First, it advises the design and integration of multicultural teams. Second, it has a clear application as a training tool. We argue that our empirical approach and the group faultline model should become a standard in the C2 research portfolio.

Introduction

During international C2 operations, e.g., emergency relief operations, people from diverse national and organizational cultures have to work together. The demands on efficient and effective coordination and cooperation are high. Not only must an emergency be sorted out, all personnel must work together with representatives of the local authorities. Many multinational C2 teams used during international relief operations are formed ad-hoc and on site. Members in this type of team generally have not met each other prior to the mission, speak different languages, and have different cultural and professional backgrounds. In spite of these difficulties, they are charged with the task of working together immediately to coordinate a flood of activities.

Cultural awareness training is often an integral part of international C2 preparedness training. The typical curriculum includes lectures on cross-cultural cooperation and exercises with multinational teams. Unfortunately, cultural awareness training is often perceived as being too general, too specific, or too academic. A second challenge to C2 researchers and cultural diversity instructors is that we cannot know for sure where the next emergency will occur. It is unrealistic to prepare C2 personnel for a specific culture. Instead of instructing emergency management personnel on the general characteristics of every nation around our globe, there is a wish for general knowledge concerning dimensions along which people from different cultures can differ. By preparing the personnel for potential differences, it is assumed that cross-cultural cooperation will run more smoothly. This paper is a link in that work.

There is a practical and theoretical need for a vocabulary that discusses culture in a general manner, and yet is flexible enough to capture the complexity of cultural differences. We suggest that the group faultline concept presented by Lau and Murnighan (1998; 2005) in combination with theory on cross-cultural issues is a step on the way to finding a vocabulary that can assess, describe and explain cultural differences in multinational teams in a way that is general, yet specific enough to be applicable. The idea of group faultlines should benefit both practitioners and academics interested in cultural issues in relation to cooperation in ad-hoc teams.

This paper has three parts. First we briefly discuss cross-cultural research and then move on to group diversity and faultlines. In the second section we present empirical evidence for the utility of the faultline concept for international C2 operations. The data are a subset of the findings from a series of laboratory experiments with participants drawn from four diverse national groups, a Christian European nation (CE), a Muslim European nation (ME), a Muslim Asian nation (MA), and a Hindi

Asian nation (HA). The final section discusses the implications of our findings for the training of multinational teams and for the C2 research community.

Background

Cross-cultural research

Culture is a relatively organized system of shared meanings (Smith & Bond, 1999) that a group of people have in common and that influences how they perceive, think about, and act upon information (Smith, Bond and Kagitchibasi, 2006). There is a plethora of scientific fields concerned with cross-cultural differences and similarities. In management research and cross-cultural psychology, the usual manner to go about such an investigation is to make an in-depth study of particular cultures, compare them and later map them to some model (e.g. Hofstede, 1980; Schwartz, 1992, 1994). Our aim is not to map specific cultures. In research reported elsewhere (Lindgren, 2007; Lindgren & Smith, 2006), we have used the C3Fire microworld (Granlund, 2002) to identify dimensions with the potential for conflict, no matter what culture people are from.

The assumption that underlies our work is that it is more valuable for people working in an international and ad-hoc setting to know in what general areas conflict may arise than to be buried with information on every culture they may encounter during their missions. Our research has pinpointed dimensions related to communication and cooperation that, if aligned, may create conflicts in an emergency management team. These dimensions are meant to supply emergency management personnel with general knowledge on cultural differences and with ideas for future ‘cultural awareness’ training. The scientific contribution of our research is not that differences between specific cultures have been studied and found; rather it is the method for uncovering such differences, the vocabulary for explaining their impact on the formation of small multinational teams, and its applicability to multicultural interactions everywhere.

Diversity and group faultlines

The unit of analysis in this paper is teams that are formed ad-hoc. Groups, including teams, are said to go through various phases, such as the classic *forming*, *storming*, *norming*, *performing*, and *adjourning*. We are concerned with the initial phase of a group’s existence during which group members know nothing or very little about each other and behavior is mostly based on expectations, roles, and reputations. During this initial phase, group *diversity* plays an important role. The term *group diversity* typically refers to the degree to which members of a group/team have different demographic attributes such as gender, nationality, ethnicity, profession, and educational background (Milliken, Bartel & Kurtzberg, 2003). Because people tend to be attracted to people who are similar to themselves (Byrne, 1971), these categorizations are thought to provide the foundation on which we interact and cooperate.

Lau and Murnighan (1998) introduced a concept called group faultlines to facilitate understanding and to explain the impact of diversity on the effectiveness of work groups. Group faultlines are hypothetical dividing lines that may split a group into subgroups based on several characteristics simultaneously. According to Lau and Murnighan, to understand a team and its dynamics, it is important to consider not only several characteristics at once but also the alignment of those characteristics. The faultline model maintains that an alignment of characteristics can encourage a group to split into subgroups. Further, multiple, cross-cutting alignments can encourage the development of a number of potential subgroups.

The first faultline model (Lau & Murnighan, 1998) focused on faultlines based upon demographic characteristics such as sex, race, and age. Although group members can categorize themselves in many different ways, they can rarely deny or hide their demographic attributes, especially those physical characteristics that stand out. For better or worse, these visually evident features contribute strongly to the initial impressions formed by others. When the group is new, faultlines are most likely to form based on demographic attributes (Lau & Murnighan, 1998). As the group interacts, other attributes such as personality, values, and skills will become increasingly influential and may, in turn, lead to the development of new faultlines (Dyck & Starke, 1999; Lau & Murnighan, 2005). In short, depending on

the similarity and salience of group members' attributes, groups may have many potential faultlines, each of which may activate. Active faultlines increase the potential for the team to split into subgroups composed of individuals with similar (aligned) attributes.

According to the model, the strength of group faultlines depends on three compositional factors: (1) the number of individual attributes apparent to group members, (2) their alignment, and, as a consequence, (3) the number of potentially homogeneous subgroups. Faultlines are weakest when attributes are not aligned and multiple subgroups can form (Lau & Murnighan, 1998). Lau and Murnighan (1998) hypothesized that groups with strong faultlines were relatively likely to split into subgroups. Further, they proposed that the rift, when activated, would likely become a source of friction and conflict that would reduce performance and group coherence.

The five hypothetical teams in Table 1 are designed to sketch demographic diversity and faultlines. Where there is minimal (Team 1) or extreme diversity (Team 5) in a group, members have only the group as such in common during the initial phase of their cooperation. In Team 1 all participants seem to be alike while in Team 5 they seem to have nothing in common that could become aligned and lead the group to split into subgroups. With repeated interaction, other attributes may align to lead either team to split into subgroups. If this team were to split into subgroups, the split would probably be due to personal interests, ideology, or personality traits.

Table 1: Hypothetical groups showing the relationship between dimension of demographic diversity and group faultlines (inspired by Lau and Murnighan (1998), and Thatcher, Jehn and Zanutto, 2003). The teams are ranked according to diversity level.

Team						Diversity level and faultline strength
1	Fireman Man 29 Swede	Fireman Man 35 Swede	Fireman Man 32 Swede	Fireman Man 31 Swede	Fireman Man 37 Swede	Minimal diversity. No faultline.
2	Physician Man 35 Bosnian	Physician Man 30 Bosnian	Fireman Man 29 Bosnian	Fireman Man 32 Swede	Fireman Man 35 Swede	Low diversity. Two faultlines with moderate strength.
3	Fire chief Man 50 Swede	Fire chief Man 55 Swede	Physician Woman 31 Pakistani	Physician Woman 31 Pakistani	Physician Woman 35 Pakistani	Moderate diversity. One very strong faultline.
4	Fireman Man 31 Indian	Fireman Man 33 Swede	Physician Woman 55 Swede	Physician Woman 52 Bosnian	Physician Man 50 Bosnian	High diversity. Several weak faultlines.
5	Student Woman 20 Swede	Teacher Man 50 Bosnia	Nurse Woman 65 Iranian	Fireman Man 25 Indian	Cook Man 45 Brazilian	Maximal diversity. Very weak faultlines.

Team 3 has one very strong faultline with four alignments: profession, sex, age, and nationality. It is likely that this group will split into two subgroups. This team could split into two subgroups that differ along all four characteristics - ethnicity, gender, profession, and age. The two fire chiefs are older Swedish men and the three physicians are younger Pakistani women. The differences in all four characteristics make the team moderately diverse. Their sharp alignment defines one very strong faultline. Lau and Murnighan (1998) argue that this is the type of team in which a faultline is most

likely to activate, split the team into subgroups, and cause friction and conflict. One implication of this claim is that faultlines are most likely to form in groups of moderate, rather than high, diversity.

Since the introduction of the first faultline model several research teams have accepted Lau and Murnighan's (1998) challenge to conduct empirical tests of the impact of faultlines and of faultline strength on group work. The original article hypothesized that groups with strong faultlines are more likely to split into subgroups and that a rift would reduce both performance and group coherence. The tests, however, suggest that the relationship between faultlines and performance is not as linear and straightforward as predicted.

One of the first empirical tests of the faultline model was conducted by Thatcher et al. (2003). They developed an analytical tool to measure faultline strength. Their data suggest that the effect of faultlines on inter-group conflict and on group cohesion and performance traces a curvilinear (U-shaped) curve like that shown in Figure 1. Groups with either very weak or strong faultlines (e.g., Team 5 and 3, respectively, in Table 1) experienced more conflict and lower morale and performed less well than homogeneous groups (Team 1) or groups with two weak faultlines (moderate faultline strength, Team 2).

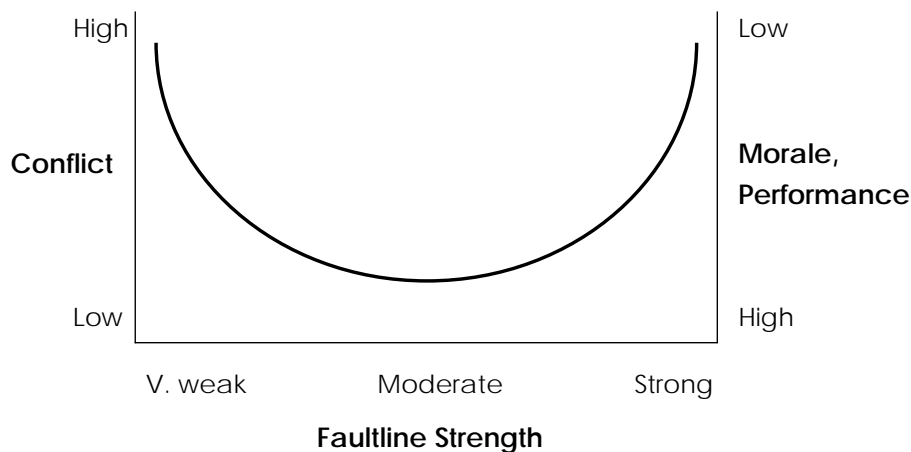


Figure 1: Diagram illustrating the U-shape of the relationship between faultline strength and conflict / performance/morale.

According to Thatcher et al., a possible explanation of the curvilinear relationship between faultline strength and performance is that some of the members of a group with moderately strong faultlines are likely to belong to more than one subgroup. As team members move between the various subgroups they may create a communication link and thereby improve communication across subgroups. As a result, the group as a whole can experience less conflict and higher levels of morale and group performance. Thatcher et al. (2003, p. 233) conclude that "... diversity in and of itself is not negative; it is the composition and arrangement of the diversity among members that ultimately influence group process and performance". These results are in line with earlier research by Early and Mosakowski (2000) investigating hybrid team cultures in multinational teams. In three separate studies, moderate levels of heterogeneity (strong faultlines) rather than low or high levels were found to lead to poorer performance.

In Table 1, the potential overlap of demographic characteristics discussed by Thatcher et al. is illustrated by Team 2 and 4. Team 2 is an example of how an individual can belong to several subgroups. The Bosnian fireman can interact with his countrymen and he can also relate to the Swedes since they, too, are firemen. One can imagine how the one Bosnian fireman could become a conduit for information flow between the Bosnian physicians and the Swedish firemen. Team 4 illustrates several very weak faultlines: there are two professions, two sexes, two generations, and three nationalities. The group could split along any one of these potential rifts. Nevertheless, everyone has something in common with everyone else making it relatively unlikely that any one faultline would rupture. For instance, the group could split based on gender, but then the two female physicians would

still have the same profession and age as the one Bosnian man. Although the Indian man's nationality is unique, he and the Swedish man share a profession and are the same age. The multitude and weakness of faultlines suggests that, if subgroups were to form, the boundaries between them would likely be quite fuzzy.

The numerous overlaps of characteristics seen in Team 4 enable fluent subgroups, meaning that subgroups can form and re-form depending on the nature of the team's tasks. It is not likely that any strong subgroups will form in this group. Instead, the numerous weak group faultlines may, in fact, prove to be the glue that holds this multinational and multicultural team together.

Few studies seem to have covered the events that actually activate group faultlines and produce a rift that has the potential to split the group into subgroups. In their original article, Lau and Murnighan (1998) hypothesized that it is the nature of the group's task that is the most likely trigger in a well-established group. However, research shows that conflicts and fragmentation in groups whose members knew each other well were activated by outside events such as the introduction of important new group members that introduced ideological rather than demographic faultlines (Dyck & Starke, 1999), and that strong faultlines are especially detrimental to team functioning when team members expect to work autonomously (Molleman, 2005).

To sum up the research on diversity and faultlines, it is clear that diversity is difficult to handle from a methodological point of view. The early research on diversity relied on overly simple measures of diversity, resulting in inconsistent results. The faultline research is still in its cradle and also suffers from some inconsistency regarding its results (Li & Hambrick, 2005), perhaps because of the immaturity of the theory itself or the use of too complex measures of diversity. It is, however, obvious from the faultline research conducted so far that team diversity can be beneficial for teams when the differences and similarities in the team are aligned in a way that makes overlap between potential subgroups possible (Thatcher et al., 2003).

Empirical method for testing the utility of the faultline concept in a C2 setting

In a microworld study designed to pinpoint dimensions of cultural diversity (Lindgren, 2007; Lindgren & Smith, 2006), we have found evidence for the viability of the faultline concept. Participants came from four diverse nations, here referred to as CE (a Christian European nation), ME (a Muslim European nation), MA (a Muslim Asian nation), and HA (a Hindi Asian nation). They engaged the C3Fire microworld in culturally homogeneous teams of four (i.e. teams of four MA, or four CE, or four HA, or four ME). All teams were charged with the same task and were asked to organize their teams in any way they pleased. This resulted in interesting differences between the teams; even though they were all exposed to the same simulation, the same task, and the same experimental setting, teams from the four different national groups played the game differently. Data captured by C3Fire and the participants' responses to a battery of questionnaires reveal how cultural norms for C2 operations are often similar across the four national groups, and how they are sometimes radically different. In this paper we present a sample of these results to illustrate how culturally-driven values and behavior can form faultlines that, in turn, have the potential to split a multinational team into conflicting subgroups.

The teams involved in the microworld study participated in culturally homogeneous teams. By comparing the groups' results we found several significant differences in how the teams attacked the task. In line with the group faultline concept, we have used the results from the four national groups to form hypothetical faultlines that could form if participants from the four nations were to be mixed in a multinational team. To illustrate this we have created a visual representation of how hypothetical dividing lines, faultlines, could form. Table 2 presents three examples.

Table 2. Example faultline maps illustrating alternative alignments of cultural norms.

<table border="1"> <tr> <td>MA ME</td> <td>CE HA</td> </tr> </table>	MA ME	CE HA	<p>Here the norms of team members from the two Islamic nations differ from those of team members from the non-Islamic nations. The two non-Islamic nations also differ from each other. This pattern of alignment is likely to produce one strong faultline that might form an Islamic subgroup within the team.</p>
MA ME	CE HA		
<table border="1"> <tr> <td>CE</td> <td>ME MA HA</td> </tr> </table>	CE	ME MA HA	<p>Here a Christian European nation differs from the other three. This pattern of alignment is likely to produce one strong faultline and to ostracize the unique subgroup from the rest of the team.</p>
CE	ME MA HA		
<table border="1"> <tr> <td>CE ME</td> <td>MA HA</td> </tr> </table>	CE ME	MA HA	<p>Here the two European nations have similar norms that differ from those of the two Asian groups that are, in turn, similar to each other.</p>
CE ME	MA HA		

Summary of findings

A faultline that isolates the dominantly Islamic cultures

The faultline map in the first row of Table 3 contains a faultline that separates the two predominantly Islamic nations from the two nations without this religious heritage. Here we present a dimension of cultural diversity that displays that alignment: the diversity in the goals pursued by the national groups during the C3Fire sessions.

The C3Fire microworld is all about managing a rapidly-spreading forest fire. Every team from the CE nation attacked the fire directly. Every team from the HA nation protected the dwellings. Teams from both Islamic nations (ME and MA) tried to contain the fire to areas without dwellings or fast-burning trees. We are ill-prepared to speculate about why the CE teams attacked the fire or why the HA teams protected the houses or why the two Islamic groups sought to contain the fire. What we know is what they did and that they did it relatively consistently. It would take an anthropologist to make sense of these findings. The cultural sources of this diversity in goal-setting is worthy of continued study by a research team with the appropriate knowledge and credentials.

We do not need to know the causes of the observed diversity in goal setting to craft its message for the C2 researchers and practitioners. This is an exemplary case study for discussion in the diversity training classroom. These four national groups were given the same task and chose to address three different goals. Their C3Fire play was radically different because they pursued different goals. There is every reason to expect that this finding will generalize whenever different national groups are given an ill-structured problem like that posed by the C3Fire sessions.

Instructors of multinational teams need to stress that the team must set explicit goals and get everyone on the team to agree on those goals prior to committing to a course of action. Failure to do so increases the odds that different groups will make different assumptions about what the goals should be and then proceed to take divergent courses of action. Collaboration becomes virtually impossible when subgroups pursue uncoordinated goals.

A faultline that isolates the Christian Europeans

Our sample of Christian European students differed dramatically from the other three groups in the rank order they gave the 10 value types in the Schwartz configural model of values (Schwartz, 1992, 1994). The patterns of rankings for all four groups are shown in Figure 2. Participants from the two predominantly Islamic countries, shown on the right side of Figure 2, ranked the 10 value types in

essentially the same order. Both groups emphasized values associated with a strongly collectivist orientation. They appear to value the good of the group more than the good of the individual.

Our sample of Hindi Asian graduate students differed subtly but significantly from the two Islamic groups. They too exhibited a strong collectivist orientation but also gave a high rank to achievement, a fiercely individualistic value type. In contrast, our sample of students who identified with a Christian European nation reveals an individualistic focus that entails doing right by the world and themselves. The Christian Europeans were radically different from Muslim Europeans and the two groups from Asia. The Hindi's rankings differed from the Muslims' much less than they differed from the Christians'.

The cross-cultural research community has written volumes of often contentious debate contrasting collectivism and individualism and their impact on societies (e.g., Hofstede, 1980; Kanagawa, et al., 2001; Triandis, 1996). The distinction is complex but real. It is not our place or our mission to cover that ground. It should suffice for us to say that our data are consistent with placing Christian Europeans near the individualist end of the continuum and placing Islamic nations near the collectivist end.

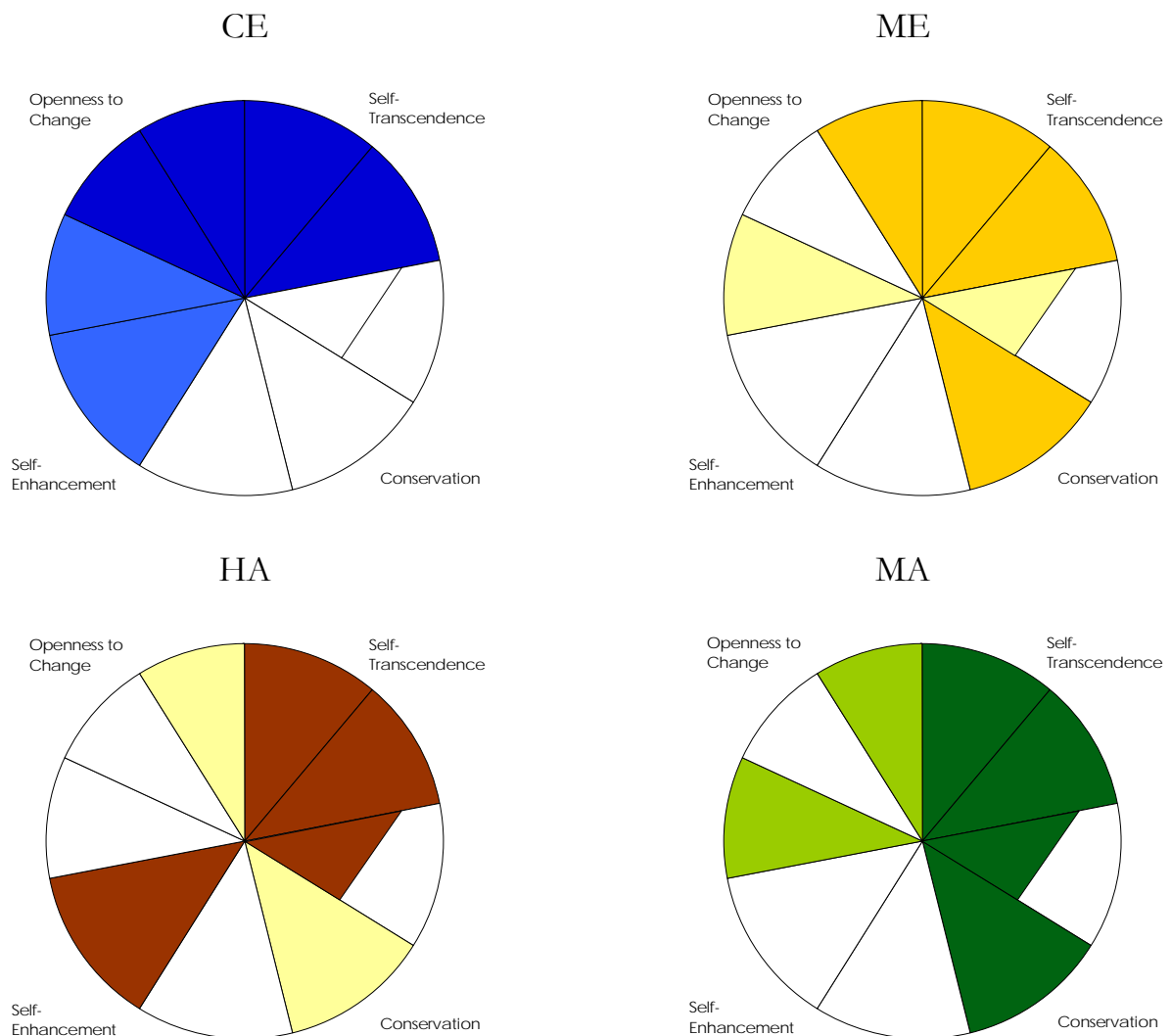


Figure 2. Comparison of rankings of the 10 value types. Dark colors indicate the top four ranked value types. Light colors indicate the middle two value types. The four lowest ranked value types are shown without color.

A faultline between the Europeans and the Asians

It is reasonable to expect that geographic proximity (ME and CE versus MA and HA) could function as a common ground. One such faultline concerns the frequency of feedback. This faultline could easily be activated and might well tear a small team apart. Members of teams from the two European groups sent each other feedback much more frequently than did members of the two groups from Asia. Thus, the Europeans and Asians exhibited profoundly different norms for the appropriateness of providing team mates with feedback.

The faultline formed by these divergent norms for the appropriateness of feedback could be inadvertently activated by misunderstandings on either side. On the one hand, Europeans who are comfortable providing feedback might become upset if they receive none, especially after working hard or well or both. On the other hand, Asians who appear to be less comfortable with feedback would likely feel overwhelmed if they were to receive what they perceive to be a barrage of feedback.

The danger here is that it would be easy to contravene another culture's norms simply by acting naturally. Accordingly, this is a dimension that needs to be included in any seminar on cultural diversity. All personnel training for multinational missions need to be forearmed with this knowledge so that they can attempt to work with their teammates to find the middle ground, that is, the amount of feedback that is neither too much for those on one side of the faultline nor too little for those on the other.

Discussion / Implications

This research has much to contribute to the domain of C2 diversity training. We have identified 30 dimensions of demographic and cultural diversity of which only three are presented here. A key lesson in any diversity training program is that these dimensions can align themselves within a team and, in the process, become a source of friction and generate faultlines. A second lesson should focus on the trainees' responses to the Schwartz value survey (Schwartz, 1992, 1994) and what they reveal about their cultures' norms for decision making, communication, and collaboration. This would involve covering specific dimensions, how they align, and their implications for efficient and effective teamwork. In-class exercises could be designed to activate faultlines and, then, to initiate conversations on how to bridge them in an after-action review.

Two key points to be covered in any diversity training are (a) that people who come from different parts of the world often think and act alike (along some but not all dimensions) and (b) that different national groups can be given the same task and elect to pursue radically different goals. Points to be covered whenever Swedes are among the trainees are the behavioral by-products of the Swedish tradition of decision making by consensus (e.g., strict partitioning of roles and tasks and unwavering adherence to those roles). Items that will likely be useful to people from many cultures include the diversity in norms for the utility of long-term planning and for the frequency of feedback and of making requests.

The purpose of this training would be to instill in all participants the self-knowledge that they will need to deal with cultural diversity when they encounter it in the field and to bridge any faultline before it rifts.

Team design prior to a course / exercise

The ability to build upon knowledge of the dimensions, either demographic or cultural, along which faultlines might rift could be a powerful pedagogical tool if used strategically. A usual team design during international training is to design the teams to be as diverse as possible. This diversity creates tension and increases the potential for conflict. The underlying assumption appears to be that letting the trainees experience tension during training prepares them for handling diversity before they go out into the field. If, however, it is important that the trainees learn specific procedures and facts, conflict might be detrimental to learning. Little learning occurs when the team has to focus its effort on getting along.

Instructors who know how dimensions of cultural diversity can align and produce faultlines can apply this knowledge when assigning personnel to a multinational team and to its tasks. If the team's main task is to learn how to resolve conflicts, the team could be composed of individuals who form two homogeneous subgroups (e.g. a team with low diversity and characteristics that align along one very strong faultline). In contrast, if cohesion is desirable, the team could be designed to create an overlap of demographic or cultural characteristics (e.g. a team with high diversity with many weak faultlines). If the application forms for training courses and exercises contained questionnaires like those used in our study, training instructors would be better equipped to assemble teams for training.

Manipulation of teams during the exercise

We believe that knowledge about alignments of dimensions of diversity and their associated faultlines could help instructors to know when (not) to intervene in group conflicts. Dyck and Starke (1999) suggested that new members in a team are likely to redefine the faultlines in a group. The managers of multinational training exercises need to be attentive to the participants' interactions and conflicts that could be signs of impending subgroup formation. Subgroups are not necessarily a problem for the team as long as they continue to communicate and cooperate to achieve a common goal. If, however, there are conflicts between subgroups that make cooperation in the team as a whole difficult, the trainees might be exposed to a learning situation in which they learn nothing more than conflict resolution.

We suspect also that instructors could inadvertently (or intentionally) predispose a team to form conflicting subgroups. Several dimensions of cultural diversity, e.g., expectations concerning feedback, appear to be particularly vulnerable to inadvertent manipulation.

A technique to resolve malfunctioning interactions within a team is to force the team to reassign the tasks within the team. During an exercise observed by one of the authors, an instructor forced his team to reassign tasks every evening at the end of the day's training. This reorganization made the team members more interdependent and probably made it more difficult for the team to split into subgroups. In addition, each individual learned to handle several roles. It would be valuable to study whether recurrent reorganization during training is indeed an efficient technique for increasing team cohesion and effectiveness and for defusing potential conflicts and rifts.

In summary, we are convinced that the group faultline concept has the potential to become a influential pedagogical tool and that its potential could be realized by continuing this line of empirical research, by interviewing people returning from international C2 training and operations, and by conducting observations of multinational training sessions.

Disclaimer and claims

The results discussed here are derived from observations of four specific national groups. No claim is made that these results generalize to every individual from these countries. No claim is made that our participants are representative of the full diversity of their cultures. Indeed, our participants are largely drawn from a self-selected pool of university students pursuing advanced degrees. Their literacy and drive are meant to be representative not of their nations at large but of those people who are likely to work in a C2 center or in other multinational operations and organizations.

We make two claims. The first is that the differences in behavior and values observed in our laboratory are in large part explained by the diverse cultural heritage of our participants. The second is that these differences and the faultlines they define are prototypical of those that can be expected to occur in small teams conducting multinational operations. The focus is less on these particular national groups and more on the generality of the observed dimensions of cultural diversity.

To characterize accurately any one of these four groups would require a substantially larger study using different methods that cast a wider net. Some of the alignments and faultline maps that we present would undoubtedly change given larger samples. Again, any lessons that might be based on this

research should emphasize the dimensions along which cultures appear to differ more than the particular faultlines.

References

- Byrne, D. (1971). *The attraction paradigm*. Academic Press, New York.
- Dyck, B. & Starke, F. A. (1999). The formation of breakaway organizations: observations and a process model. *Administrative Science Quarterly*, 44, 792-822.
- Granlund, R. (2002). *Monitoring distributed teamwork training*. Unpublished doctoral dissertation, Linköpings Universitet, Linköping, Sweden .
- Hofstede, G. (1980). *Culture's Consequences: International differences in work-related values*. London: Sage Publications.
- Kanagawa, C., Cross, S. E., & Markus, H. R. (2001). "Who Am I?" The cultural psychology of the conceptual self. *Personality and Social Psychology Bulletin*, 27 (1), 90-103.
- Lau, D. C. & Murnighan, K. J. (1998). Demographic diversity and faultlines: the compositional dynamics of organizational groups. *Academy of Management Review*, 23 (2), 325-340.
- Lau, D. C. & Murnighan, K. J. (2005). Interactions within groups and subgroups: the effects of demographic faultlines. *Academy of Management Review*, 48 (4), 645-659.
- Li, J. & Hambrick, D. C. (2005). Factional groups: A new vantage on demographic faultlines, conflict, and disintegration in work teams. *Academy of Management Journal*, 48 (5), 794-813.
- Lindgren, I., & Smith, K. (2006). Using microworlds to understand cultural influences on distributed collaborative decision making in C2 settings. *Proceedings of the 11th The International Command and Control Research and Technology Symposium (ICCRTS)*, Cambridge, UK. Awarded the Willard S. Vaughan, Jr. Best Student Paper Award.
- Lindgren, I. (2007). *Towards the mitigation of cultural barriers to communication and cooperation*. Licentiate thesis, Linköpings universitet, Linköping, Sweden.
- Milliken, F. J., Bartel, C.A. & Kurtzberg, T.R. (2003) Diversity and creativity in work groups: A dynamic perspective on the affective and cognitive processes that link diversity and performance. In Paulus, P. & Nijstad, B. (Eds). *Group creativity*. New York: Oxford University Press.
- Molleman, E. (2005). Diversity in demographic characteristics, abilities and personal traits: do faultlines affect team functioning? *Group Decision and Negotiation*, 14, 173-193.
- Schwartz, S. H. (1992). Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology*, 25, 1-65.
- Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues*, 40 (4), 19-45.
- Smith, P. B. & Bond, M. H. (1998). *Social psychology across cultures*. London, Prentice Hall Europe.
- Smith, P. B., Bond, M. H. & Kağıtçıbaşı, Ç. (2006). *Understanding social psychology across cultures: Living and working in a changing world*. London: Sage Publications.
- Thatcher, S. M. B., Jehn, K. A., & Zanutto, E. (2003). Cracks in diversity research: the effects of diversity faultlines on conflict and performance. *Group Decision and Negotiation*, 12, 217-241.
- Triandis, H. C. (1996). The psychological measurement of cultural syndromes. *American Psychologist*, 51 (4), 407-415.