

WIRED INTERNATIONAL TEAMS: EXPERIMENTS IN STRATEGIC DECISION-MAKING BY MULTI-CULTURAL VIRTUAL TEAMS

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ABSTRACT

This article describes a research project to investigate strategic decision-making by multi-cultural virtual teams. By 'virtual', we mean the team does not necessarily meet face-to-face and it depends to a large extent upon information technology to communicate. We include any technology that could be useful, from telephone to electronic mail to videoconferencing. Some preliminary experiments are described and a theoretical framework is proposed. The data collection instrument is discussed in detail. The project's objective is to come up with recommendations to managers for a choice of communication technologies depending on a team's composition in terms of members' culture.

I. INTRODUCTION

This article is about multi-cultural virtual teams. A virtual team is a team whose members do not necessarily meet face-to-face. Rather, they employ communication technologies such as electronic mail, videoconferencing or whiteboarding. Such technologies are often labelled groupware, computer supported cooperative work (CSCW), or group decision support systems (GDSS). A multi-cultural team is a team whose members have different cultural backgrounds, for instance because they are from different countries. Both in competitive and in non-profit environments, international co-operation is on the increase, as well as

working in teams, as well as the use of groupware. This makes research on multi-cultural virtual teams interesting.

The current state of technology is such that virtual teams can technically function well in large parts of the world. Synchronous groupware includes telephone, video conferencing, and whiteboarding. It is rather slow in many cases, due to the limited capacity of current transmission channels. Asynchronous groupware includes collaborative writing, World Wide Web, and electronic mail. For these, transmission speed is no longer a problem.

These communication possibilities carry vast potential for enabling people from different parts of the world to collaborate without travelling. This in turn is rapidly changing the way organisations function. Geographical distances are no longer obstacles for communication. People can simultaneously participate in various teams. Response times between external events and the strategic reactions of organisations shorten.

There are, however, obstacles of a very different nature than bandwidth or software standards. These reside in the human mind. From experiences in multi-culture workgroups it is known how difficult it is to get multi-cultural groups to function. People from different cultures tend to misunderstand each other's behaviours and hence come to distrust one another. It would be short-sighted to expect GDSS technology to overcome these problems. Indeed, Bots et al. remark that the evolution of cultures, caused by the confrontation of different cultures, will result in changing demands towards the supporting technology. This will make it necessary to gain more in depth knowledge about the relation between organisational cultures and the impact on the possibility and use of supporting technology (Bots, 1995).

It is clear that groupware cannot just be dumped into multi-culture organisations, in particular multi-national organisations. Research is needed on the interplay of information technology, multi-cultural interaction and team performance. If possible, the technology should facilitate the interaction leading to better team performance, whereas in practice the opposite could occur. For instance, executives might simply refuse to take part in electronic meetings.

The primary question we address is the following: *How can a virtual team be made most effective, given the members' cultures and available technology?*

In order to answer this question, another one must be addressed first: *How can the performance of a virtual team be measured?*

This area of research being so new, we decided to begin our research by carrying out a number of experiments in order to improve our understanding and our theoretical framework. This approach allows us to control the environment and repeat observations. At the same time, we attempt to collect as much qualitative data from case studies as possible.

In the following section, we introduce our experimental framework. Then, we introduce reference theories in the areas of strategic decision-making, group decision support systems, and national culture. After this, we mention some prior work in the same area that constitute the source of inspiration for the present proposal. Considerable attention is given to the data collection instrument we

shall use. After the description of the experimental set-up, we venture some hypotheses and we give some concluding remarks.

2. EXPERIMENTAL FRAMEWORK

Our experimental framework in **Figure 1** is (a modified version of) the frequently used group decision support framework of (Dennis, 1988).

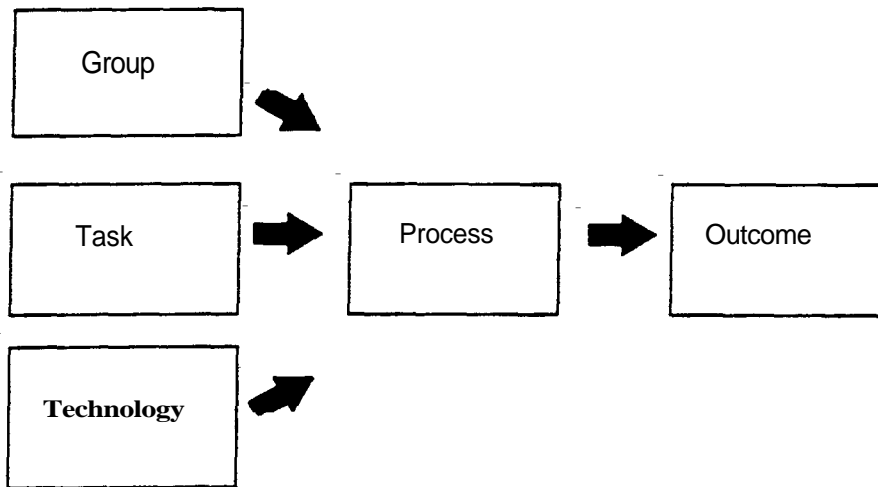


Figure 1. Experimental framework (based on Dennis 1988)

Group, task and technology are controlled variables. Process and outcome are dependent variables. *Group* concerns the people who have to perform the task together, so in our research the multi-cultural virtual teams. Relevant group properties include its development stage, size, composition, coherence, and goal congruence. With respect to composition, we are especially interested in the cultural aspects of the teams. The *task* is what the group is supposed to achieve. Our research includes various tasks, but all focus on decision-making for ill-structured problems (such as strategic decision-making). We wish to create an especially large number of repetitions of one of these. *Technology* refers to the communication media used. Besides bare media, **specific** tools are also included - for example, GroupSystems and Graphics COPE. *Process* refers to the process of performing the task, and *outcome* to the outcome of this process. These two are the dependent variables in the model. They are measured through explicit questioning, as shown in the section on data collection below. We shall also carry out informal data collection and evaluation to complement the data collection and to facilitate interpretation of the formal evaluation data.

We expect the controlled variables to greatly modify each others' effect on the decision-making process and outcome. For example, a particular technology will function differently in the cultural context in which it was invented than in another. More reflection on this matter can be found in the last section of the paper.

The three controlled variables - group, task and technology - ask for reference theories in the areas national culture, strategic decision-making and group decision support systems. The reference theories we used are provided in the next section.

3. REFERENCE THEORIES USED

3.1 Reference theory for strategic decision-making

Strategic decision-making is a concept often used loosely to mean 'making decisions that are crucial to an organisation's survival'. Here, we shall use a definition which is somewhat more limited and which thus excludes some of the decision making that matters to an **organisation's** survival.

Based on (Noorderhaven, 1995), we define strategic decision-making as a process carried out by a team of people, with three characteristics:

1. On the basis of existing objectives, a plan of action, or strategy, is generated
2. The information available about the problem situation is imperfect or incomplete, so that assessment is necessarily subjective, and
3. The strategy includes options for action to take when unexpected contingencies occur.

We divide the decision-making process into three activities: awareness, analysis, action. This is not a chronology, but the steps alternate. As soon as the team becomes aware of some novel problem aspect, it can choose to analyse it and then to formulate plans for action.

3.2 Reference theory for group decision support systems

The term 'group decision support systems' (GDSS) refers to a diverse set of methods and information technology to support groups in handling complex problems or tasks. Complex, 'messy' problems have a multi-aspect, a multi-level, a multi-goal, and a multi-paradigm character. Decision-making for messy problems in groups means that several people with different mental models (caused by different backgrounds, including cultures, and experiences) and power interact in a bargaining process (Smits, 1995). Mental models include knowledge, beliefs, needs, norms, emotions, goals. These models are important, since they determine actual behaviour, and their implicit nature asks for explicitation, for which several techniques are available (for example, cognitive mapping, system dynamics). The effect of using a GDSS is to be growth of the shared mental models of the decision-making group with respect to the complex problem at hand (see **Figure 2**). A shared understanding of the problem will lead to consensus and therefore to better commitment with the actions to be performed to solve the problem.

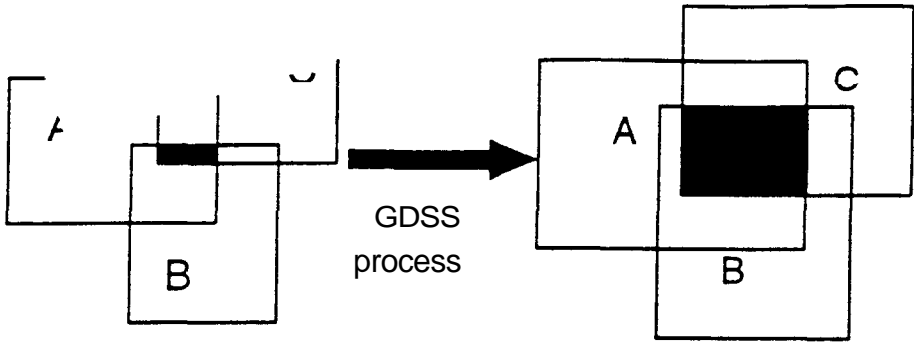


Figure 2. GDSS aims at growth of shared meaning (Smits 1995).

Two dimensions bridged by GDSS-technologies, or groupware, are time and space. Therefore these two are useful for categorising the technologies that are available. Traunmüller (in Bots, 1995) gives such a classification. Based on this classification, we sum up some available technologies in **Table 1**.

Any of these technologies could be applied. However, in international teams, the focus will be on different-place groupware, because it is more convenient and can save time-consuming travelling. In our experiments, we employ groupware from all four cells except the upper right one (same place, different time).

Table 1. A taxonomy of groupware technology

	<i>Same time</i>	<i>Different time</i>
<i>Same place</i>	Meeting facilitation	Work shifts, team rooms
<i>Different place</i>	Whiteboarding Video conferencing Broadcast seminars Telephone	Electronic or voice mail Collaborative writing WWW

A critical discussion of experiences with groupware is given by Grudin (1994), who identifies obstacles for success of groupware, some of which are obviously rooted in cultural factors. For instance, he states that 'groupware can lead to activities that violate social taboos, threatens existing political structures, or otherwise demotivates users crucial to its success'. Incidentally, Grudin's article also indicates how many obstacles exist to the introduction of groupware even in the industrialised countries, which seem to be the implicit setting of the article.

It has long been recognised that technology is culture-bound (see for example Goulet, 1977). It follows that groupware is also culture-sensitive. Uustdar et al. discuss this issue in the case of videoconferencing, a same-time, different-place mode of communication in which participants have audio contact, shared

workspaces, and usually limited video contact. When somebody issues a statement, a listener will not only listen to the content of what is being said. Depending on their culture, listeners will also wish to know something about the speaker in order to be able to interpret what is being said (Dustdar, 1996).

3.3 Reference theory for national culture

Recently, much use has been made in Information Systems research of the work of Geert Hofstede (Hofstede, 1980; 1991). In the 1970s, Geert Hofstede got access to data from a large-scale study on work-related values of IBM personnel in many countries. Since then, many have added to his work. His main findings, which have proved to be of value in research as well as in consulting, are that the attitude of people towards their jobs and employers can be classified along a number of 'dimensions of culture'. These were found in a comparison among nationalities and can be used to study cultural differences between individuals from different nationalities.

Hofstede's dimensions from the IBM study are: (a) power distance, (b) individualism versus collectivism, (c) masculinity versus femininity and (d) uncertainty avoidance. A fifth dimension was found in later work with South-East Asian cultures: (e) long-term versus short-time orientation. It should be kept in mind that these five **dimensions** are projections. A real culture has *a score* on each of them, and it is the mix of scores that renders each culture unique. This means that in multi-cultural group decision-making, a myriad of possible cultural configurations exist.

Power Distance has to do with the extent to which people expect their superiors to think for them. In high-power distance settings, group member will not easily venture their opinions if superiors are present. Reciprocally, superiors from a high-power distance setting will expect subordinates to speak only when granted the floor by a superior. They will be disagreeably surprised if subordinates freely ventilate their opinion to them.

Individualism has to do with the extent to which a person is an individual. In individualist cultures, everyone is expected to have their own opinion about anything. In collectivist countries, opinions are pre-determined by group membership. The two are so tightly linked that to express a deviant opinion is to challenge the group (see for example, Gudykunst, 1988, pp. 153-154). There is no distinction between the message and the messenger. In the words of Amason, a collectivist culture does not distinguish between cognitive and affective conflict (Amason, 1996). Decision-making techniques that rely on cognitive conflict will therefore be quite abhorrent to members of collectivist cultures because, from their perspective, these techniques require them to be rude and to destroy interpersonal relationships. Typically, when tensions mount in a group, members of collectivist cultures will be evasive rather than confrontational. This will be insulting to individualist interlocutors, who expect to be told honestly what is the matter. So, there is a fair risk that in a meeting between members of individualist and collectivist cultures, they will mutually insult each other by their style of communication. On the other hand, if a member of a collectivist culture is forced

to interact with out-group people, he or she may not hesitate to engage in fierce conflict.

Masculinity has to do with the extent to which open conflict is deemed acceptable. In a masculinist culture, sympathy is with the fighter and with the winner. In a feminist culture, it is with the meek and with the underdog. Hofstede (1991) reports that an executive from a feminist culture, after having worked in a masculinist culture for some years, commented on the difference in the aim of business meetings across cultures. In his feminist country, he was used to reaching accommodations and decisions during meetings. In the masculinist countries, meetings were mere displays of strength, and decisions were taken by individuals afterwards.

Uncertainty avoidance has to do with a culture's attitude towards deviant behaviour. People from a country with high uncertainty avoidance will not be tolerant of deviant ideas. This will be a hindrance to creativity and innovation. In group processes, high uncertainty avoidance goes along with strong expression of emotions.

Long-term orientation has to do with the relative importance of the here-and-now versus the future. In a short-time orientation setting, group members will do everything to please their interlocutors. In a long-term orientation setting, they will only do so as long as no ulterior objective is endangered.

According to Hofstede (1991), the cultural differences that have been found to be the most frequent cause of trouble in organisations are differences in power distance and in uncertainty avoidance. A recent publication about a multi-cultural systems development project confirmed this (Barret, 1996). The manager, being from a country high on power distance and uncertainty avoidance, expected punctuality and discipline, and strict adherence to deadlines, from the programmers. These, however, were from a country low on power distance and uncertainty avoidance. As a consequence they expected to be left free, and that deadlines would be negotiable if unexpected problems occurred.

4. PRIOR RESEARCH

4.1 Strategic decision-making

Interaction within groups is an important issue in the literature on strategic decision-making (for an overview, see Noorderhaven, 1995). Conformity pressure may lead to premature consensus, and to low-quality decisions. Hence it is often necessary to institutionalise conflict in decision-making procedures. Methods based on this idea, like 'devil's advocacy' or 'dialectical inquiry', have been demonstrated to lead to better decisions (Schweiger, 1986). However, it is very difficult to stimulate the kind of conflict needed for reaching good strategies without destroying the team spirit. Amason distinguishes two types of conflict during group decision-making: cognitive conflict and affective conflict. Cognitive conflict is about the content of the decision, whereas affective conflict is about interpersonal feelings. Cognitive conflict improves the quality of a decision. Affective conflict, in contrast, has a detrimental effect on decision accep-

tance (Amason 1996). While there have been a number of studies on the effect of various decision procedures on the level of conflict and on decision quality and acceptance, the role of cultural diversity and decision support systems, and the interaction between the two, has hitherto been neglected. As we shall see **beLOW**, **cultures differ greatly in the exlcm lu wliiUi they can distinguish between** cognitive and affective conflict.

4.2 Group decision support systems

Mental models, consisting of knowledge, beliefs, needs, norms, emotions, goals, are the implicit theories determining behaviour. They are influenced by someone's background (education) and experiences. The effect of **using** a GDSS on the outcome of a group decision process is reported to be growth of the shared mental models between the decision makers with respect to the problem at hand (Senge, 1990; Jessup, 1993). We investigated the possibility of monitoring the decision process by comparing the cognitive maps of participants at certain periods in the process. Even for groups dealing with relatively easy standardised problems, we concluded that use of GDSS technology did not result in better decisions, probably due to lack of a strictly prescribed process-structure, lack of skills of the technique in use (cognitive mapping) and lack of (external) facilitation in the process (Smits, 1997).

A survey study by Hutchinson et al. among Swiss banks revealed the following: E-mail was the most frequently used groupware tool. Electronic meeting systems were not used at all. The use of groupware decreased as seniority in the organisation increased. Top management relied **most** heavily on face-to-face communication, followed by telephone contact (Hutchinson, 1995).

4.3 National culture and strategic decision-making in groups

A controlled experiment with strategic decision-making by groups which played different national cultures is described in Hofstede (1996). In this experiment, called **'The Windmills of our Minds'**, participants performed a strategic management task within a fictitious multinational energy company. The experiment had the set-up of a business game. The participants were divided into groups that played national subsidiaries. Each group chose a 'synthetic national culture' that acted as a collective mental pre-programming for it. Every country's subsidiary was to design a 'communication architecture' for a new product/market combination. As part of the game, a consultant from one country was sent by the CEO to advise one of the other subsidiaries about their communication architecture design. The ensuing meetings held a conflict of interests in a cross-cultural setting, with culture clash as a result.

For the researchers, an important objective of this game was to find out whether the idea of having participants play both a fictive culture and a role in a fictive business situation could work. The notion of synthetic national cultures was taken from Pedersen (1993), who **used** it for intercultural counselling. To our knowledge, it had not been used in business simulations, and we wondered

whether the experimental task would not dominate the fictive culture. This was not so. The game was found to be not only very motivating but also powerful as a vehicle for creating an experience of culture shock and as a handle for discussing multi-cultural ventures. Over three repetitions of the game, there were some consistent findings:

- The synthetic culture affected both the process of decision-making and its outcome. The atmosphere, level of noise and length of meetings were affected by synthetic culture, as well as the progress and the nature of the communication architecture agreed upon.
- Members of different synthetic cultures had widely different perceptions of the same events.
- In the presence of a 'foreign' visitor, members of one synthetic culture tended to become closer-knit as a group.

At the same time the researchers were aware that synthetic culture can by no means be equated to real culture. For one thing, synthetic culture scripts comprised only one dimension, whereas a real person's cultural make-up comprises all five. More fundamentally, one's culture is so deeply ingrained that it is not easy to playact any behaviour not conforming to it. The researchers strongly felt that synthetic cultures which were very unlike the players' own were not played true to their real version. For instance, a collectivist group enacted by people from highly individualist countries would appear rather feminine than collectivist. Allowing for the difference between synthetic and true culture, synthetic culture was nevertheless very powerful in inducing the experience of culture clash. Also, the fact that culture had been made explicit to the participants allowed for an open evaluation after the game. So, *'The Windmills of our Minds'* was a strong encouragement for the researchers to pursue this line of experimental research further. Having found out that synthetic culture can be meaningfully used as a **substitute** for actual cultural differences, it was now possible to add the 'virtual' aspect to the teams.

5. DATA COLLECTION AND EXPERIMENTAL SET-UP

5.1 Data collection

To collect data, two approaches exist, that can be used jointly. The first is to set objective standards for the process and the resulting design. For the process, these could include meeting duration, distribution of speaking time across participants, time spent on relations versus time spent on task and evaluating the results of the decision process.

The second approach for collecting data is to ask the participants about their experiences. This yields subjective data. A useful side effect is that it requires structured reflection of the participants about the (experimental) decision process. A format that would provide data that are easily comparable across experiments is to present participants with a questionnaire just after the game. The questions can

address both the design process and its outcome. Relevant questions for such an evaluation questionnaire can for example be found in Amason (1996).

We plan to use the following questions:

Pre-experiment:

- IRIC Values Survey Module. 20 five-point questions. This questionnaire, distributed by IRIC (Institute for Research on Intercultural Co-operation) provides independent variables (participants' scores on Hofstede's dimensions of national culture, and demographic data) against which to check experiment outcomes.
- Other questions related to participants' familiarity with the experimental task, to be used as independent variables.
- Data on whether, and how, the members of each group **know** each other prior to the experiment.
- Data on the participants' motivation for the experiment.

During the experiment:

- Facts about the experiment: which communication channels or tools are used (video, whiteboard, face-to-face, e-mail, GroupSystems, Graphics COPE), team size.
- Informal process monitoring data, to be collected by researchers through observation. Can hear on, for example, level of noise, conflict, interruptions, technical problems during the work, and so on.

After the experiment:

- Informal evaluation. Each participant is asked to comment upon the process in general (what went well, what went badly), and upon the characteristics of the communication channels in relation to the task at hand (suited or not, and why).
- Five-point questions about the experiment, given in random order. See **Table 2** for an overview.
- Objective measure of the quality of each group's result, on a number of five-point scales (0: very poor through 5: excellent). Task-dependent. Scales include completeness, quality of assumptions, elaborateness, originality.

5.2 Experiments

In this section, we describe the four experiments that constitute this year's program in our research project. All are to be carried out in 1997. At ECIS '97 we shall be able to report on some of them.

- *Global virtual team collaboration*: groups of five students from different countries perform a design task, following a prescribed process: brainstorming, deciding and reporting of the decision. The groups are virtual, using e-mail and the WWW.
- *The Windmills of Our Minds*: This experiment is described in Hofstede (1996), and prior experiences with it are reported in **Section 4.3** above. It will be repeated at ECIS '97. Groups of four persons perform a **design** task in the area of Strategic Planning. The groups are culturally homogeneous, by their real na-

tionality or by enacting a fictitious 'synthetic culture'. First, every group makes a design. Then, representatives from two groups have to reach an accommodation about their designs. This experiment takes half a day.

A Daughter in Danger: This is a simulation game about a business takeover. Three four-member teams represent three organisations. This simulation will among others be held at the conference *The International Office of the Future*, to be held in October 1997. This is a distributed conference. It will take place at three locations in Europe, Australia and the United States. The three teams that constitute a game will be geographically apart. Synchronous (video, audio) and asynchronous groupware (e-mail, World Wide Web) are available.

- *Strategy development:* 10 groups of four persons perform a strategy-development task, supported by GroupSystems. Part of the groups is culturally homogeneous (Dutch), the other part is culturally heterogeneous (different nationalities). In a second phase, the same groups perform a strategy-evaluation task, with the same technological support. For both tasks, the results are important for the participants, since they are part of the management game they are involved in.

Table 2. The ex-post questions

nr	category	question
1	affective conflict	How much personal friction was there in the group during the group work?
2	cognitive conflict	How many differences of opinion about the task did the group have to work through?
3	communication channel (for each channel)	How well did you like communicating via (video, face-to-face, e-mail, ...)?
4.	communication channel (for each channel)	How much did communicating via ... (video, face-to-face, e-mail, ...) contribute to the quality of the group's work?
5	process quality	How well did the group co-operate ?
6	outcome quality	How good a result did the group achieve?
7	outcome quality	Could you have achieved a result of at least the same quality on your own?
8	commitment	To what extent were your own personal opinions reflected in the final result?
9	affective acceptance	Did you enjoy working with the group on this task?
10	affective acceptance	How satisfied are you with the way in which the result was reached?

6. DISCUSSION AND CONCLUDING REMARKS

The aim of this research is to come up with practical recommendations for somebody who needs to choose communication technologies for a virtual team.

Based on prior research we mentioned, our general hypothesis on this issue is:

Hypothesis 1: Successful strategic decision-making by virtual teams will be hampered if the communication clues that fit the participants' national culture characteristics are not offered by the communication technologies that are available.

Table 3. Features which a communication technology needs to possess, depending on group members' culture

culture dimension	low	high
power distance		A mechanism by which a discussion chairman can grant the floor and participants can request it
individualism	Tools for producing creativity (possibly with cognitive conflict) without affective conflict. For instance, anonymous contributions in a 'common pool'.	Tools for achieving convergence in mental models. Allow side-chatting.
masculinity	-	Tools for control of total speaking time per group member
uncertainty avoidance		A formal protocol with formally defined roles
long-term orientation	Tools for making the interaction realistic, for example, good image, voices.	

Table 3 presents specific properties that we expect to be beneficial for a virtual communication medium in order to accommodate the various culture characteristics. Taking **Table 3**, we can look at the communication technologies from **Table 1** and formulate hypotheses regarding their suitability, depending on the group's culture mix. **Many virtual teams will be ill-suited, simply because they are geographically disjoint.**

Same time, same place meetings are the least problematic ones. All the clues and options are available. It would seem that whatever the technology used, the biggest problem is to get teams with both individualistic and collectivistic cultures to function. The risk here is that the individualists monopolise the floor, because the setting is not acceptable to collectivists. Another problem could occur in a masculinist culture, where participants might refuse to accept each others' ideas because this would mean defeat.

To avoid affective conflict, anonymity of ideas is sometimes used. With a tool such as GroupSystems, contributions can be anonymised. This can help group members concentrate on what is being put forward rather than who said it. It seems promising to investigate under what conditions anonymity can help. Virtual groups usually have a degree of anonymity anyhow, and if anonymity can be helpful in a face-to-face context it may also help in a virtual meeting. This is a coin with two sides to it. Even though an anonymous exchange of ideas can be cognitively fruitful, people prefer knowing with whom they are interacting. Even in the authors' individualist country, a member of a virtual team that only employed e-mail, and whose members had not known each other previously, said 'I never knew how important it was to me to know what somebody looked like'. There seems to be a tension between the commitment needed for working together and the lack of actual experience of each others' presence. Experiences of educators also suggest that a virtual team changes once its members have actually met face to face. This leads to a second hypothesis:

Hypothesis 2: The commitment to a virtual team of its participants will largely depend on whether they have met in person previously.

Same time, different place technologies include whiteboarding, video conferencing, broadcast seminars and telephone. Whiteboards, or shared electronic workspaces, are very egalitarian, and will be hard for members of high-power distance cultures to work with. On the contrary, a broadcast seminar will be harder for low-power distance, individualistic cultures, unless they have a possibility to respond to the ideas that are put forward.

Telephone is very versatile, and it is a very good medium for two-person contact. However, because it requires verbal utterances, feeling around for support is hard in a telephone meeting with more than two participants. A speaker who does not get an immediate answer from the other members is likely to be anxious about the effect of his words. In a two-person call, the listener will frequently say 'yes' to indicate he is still listening. In a telephone conference, this will not happen so easily. Explicit feedback is required. At the same time, there is no possibility for anonymity. Moreover, because all communication is oral, without text or pictures to correct or supplement the verbal utterances, misunderstandings will frequently arise between speakers from different countries. All in all telephone conferences do not seem so practical in a multi-cultural team. So far, we do not intend to include telephone conferences in our experiments.

One practical problem with same-time technologies is that globally dispersed teams will have problems finding a suitable moment to meet, and even synchronising their clocks. Assembling a group of people who all have different things to do is hard even in a same-place setting, but in a multi-time-zone setting it is worse. This is a reason why different-time technologies are often preferred in practice.

Different time, different place technologies include e-mail, voice mail, collaborative writing, and the WWW. Because of the different-time component, these technologies are less directly social and more intellectual in nature. Except voice mail, they all rely on text and pictures. The asynchronous nature is an ad-

vantage for teams that operate in different time zones around the world. These media are ideally suited for the exchange of ideas, in other words: of decision content matter. It could be that they are not so suitable for actually reaching a decision. For instance, one could easily imagine an executive recalling how the **management** team looked each other in the eye and said 'Yes, we'll do it'. How would such a thing happen in a virtual team? Most likely, much of the decision-making process would take place through virtual teamwork, but for reaching the actual decision, the team would assemble face-to-face if at all possible. This was stated by an anonymous manager at a conference who said he did not travel *less* now that virtual teamwork was possible, but he travelled more *purposefully*.

To sum up, we expect the different technologies to be suitable in different phases of decision-making. This is expressed in

Hypothesis 3: Asynchronous technologies such as e-mail, collaborative writing and the WWW will be the most successful media for the creative phases of a virtual team's decision-making process.

Hypothesis 4: Synchronous technologies such as face-to-face meetings, telephone or video conferences will be the most successful media for the choice phases of a virtual team's decision-making process.

During our controlled experiments, we will collect data to test our hypotheses. Hypothesis 3 and 4 can be tested particularly through the experiment '*International Office of the Future*'.

Apart from the above, we expect to find many other results in our controlled experiments. Some will be unexpected. In any case we expect the following:

- Team members who have met each other before engaging in a virtual team will collaborate more readily, especially in those cultural cases where the prior acquaintance provides the clues that are missing in the virtual setting.
- The way of dealing with conflict will differ greatly between individualist and collectivist team members. In terms of Amason's cognitive and affective conflict mentioned above, we expect collectivist team members not to distinguish between the two. If they have differences of opinion they will try to resolve them with great delicacy. If the team also includes individualist members, they will not perceive this, with possibly violent quarrels as a result. Collectivists will, if at all possible, avoid persons with whom they are in conflict.

▷ *Enacting a synthetic culture* will lead to results that differ greatly from *being oneself* when doing the experiments. An individualist impersonating a collectivist will not behave like a collectivist. Neither will he or she be their usual selves. This is a limitation, of course. Enacting also has its advantage, though. Because people are aware that they are just 'making believe' they can start thinking of national culture as something that can be learned, understood, and dealt with in interpersonal communication and in group work.

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