

## **Expertise in Making Sense of Cultural Surprises**

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### **ABSTRACT**

Culture is often treated as lists of context-general trait dimensions, such as power distance or individualism/collectivism. From this view, cultural awareness training often amounts to assessing dimensions for individual trainees, and showing how their responses differ from typical responses of the target culture. An important issue with this “dimensions” approach is that it can lead to a sophisticated form of stereotyping, as trainees learn overly simple models of the target culture. We have been exploring alternative conceptions of culture, as well as the processes by which experts, for whom successful cultural interactions are essential to their tasks, exploit opportunities to improve their cultural understanding. In the present paper, we describe a study in which participants with differing levels of expertise played the role of an Information Operations officer in a vignette. Specifically, participants (n=60) were either laypeople with no military background, novices who were trained in Information Operations, or individuals who had training and Information Operations field experience. The vignette was based a real incident set in Kosovo that was elicited by cognitive task analysis methods in an earlier study. The scenario contained surprising events associated with the respective target cultural group. Participants were asked to explain their understanding of the situation in a think-aloud procedure, as well as what they would want to know to inform their understanding. Our results indicated several differences between the strategies used by novices and experts to make sense of cultural anomalies. Experts tended to generate more alternative explanations than novices, were more likely to consider culture as an explanation for the surprising events, and tended to ask questions that would explicitly challenge fundamental assumptions underlying their conception of the culture. Implications of the study for cultural training are discussed.

### **ABOUT THE AUTHORS**

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Why would China choose to host the 2008 Summer Olympics, when the Chinese go to such lengths to protect their citizens from outside influence? How can the reasoning of suicide bombers be understood? Cross-cultural interactions sometimes result in confusion or conflict when the actions of a person from another culture are inconsistent with expectations about how people from that culture are likely to behave. As cross-cultural interactions become commonplace in business, military, and academic settings, increasing attention is being focused on developing training programs to improve cross-cultural interactions (Osland & Bird, 2000; Rentsch & Abbe, 2008).

The current study examines expert-novice differences in the ability to make sense of cultural surprises. The first section of the paper reviews models of sensemaking and cultural sensemaking, the research study is described next, followed by implications for cross-cultural training.

### **SENSEMAKING**

The Data/Frame Model of Sensemaking (Klein, Phillips, Rall, & Peluso, 2004) proposes that people makes sense of situations by fitting incoming information, or individual data elements, into a frame that links them to other elements. In other words, people react to information by trying to find or construct a story, script, map, or some other type of structure to account for the data. Their repertoire of frames affects which data elements they consider and how they will interpret these data. If people notice data that do not fit into the frames they've been using, the surprise will often initiate sensemaking to modify the frame or replace it with a better one.

According to the Data/Frame Model (see Figure 1), there are several distinct routes by which people can process new information. These routes revolve around six key sensemaking activities: (1) elaborating a frame, (2) questioning a frame, (3) preserving a frame, (4) comparing frames, (5) reframing, and (6) constructing or finding a new frame.

As people learn more about the environment, they will extend and elaborate the frame they are using. Questioning a frame occurs when a person is surprised and has to consider data that are inconsistent with their current frame. People can explain away the data that do not match the frame, and so preserve the frame. There are times when people deliberately compare distinct frames prior to settling on an explanation. Re-framing occurs when a person adopts alternative new key assumptions, and so discovers a completely new way of understanding a situation. Sometimes we can replace one frame with another, but at other times it is necessary to seek out or construct a new frame from scratch.

Errors in sensemaking may occur when people fail to recognize anomalies in the environment, and as a result, they interpret incoming information using an incorrect frame. Previous research suggests that experts may have a larger repertoire of frames compared to novices (Klein et al., 2004). Furthermore, experts may also be better at selecting which frame to use in a given situation.

### **CULTURAL SENSEMAKING**

Sensemaking is especially challenging when people try to make sense of the behaviors of people from another culture. Cultural differences lead to an even greater likelihood that people will apply incorrect frames and fail to identify and recover from these errors.

#### **Cultural Dimensions Approach**

Cultural dimensions, such as Hofstede's (2001) and Schwartz's (1992) cultural value dimensions, are commonly used as the basis for cultural awareness training. Trainees receive an overview of the cultural dimensions (e.g., individualism/collectivism, uncertainty avoidance, and power distance) and a description of how cultures compare on each dimension. This training supports the development of sophisticated cultural stereotypes that replace the trainees' novice or generic stereotypes.

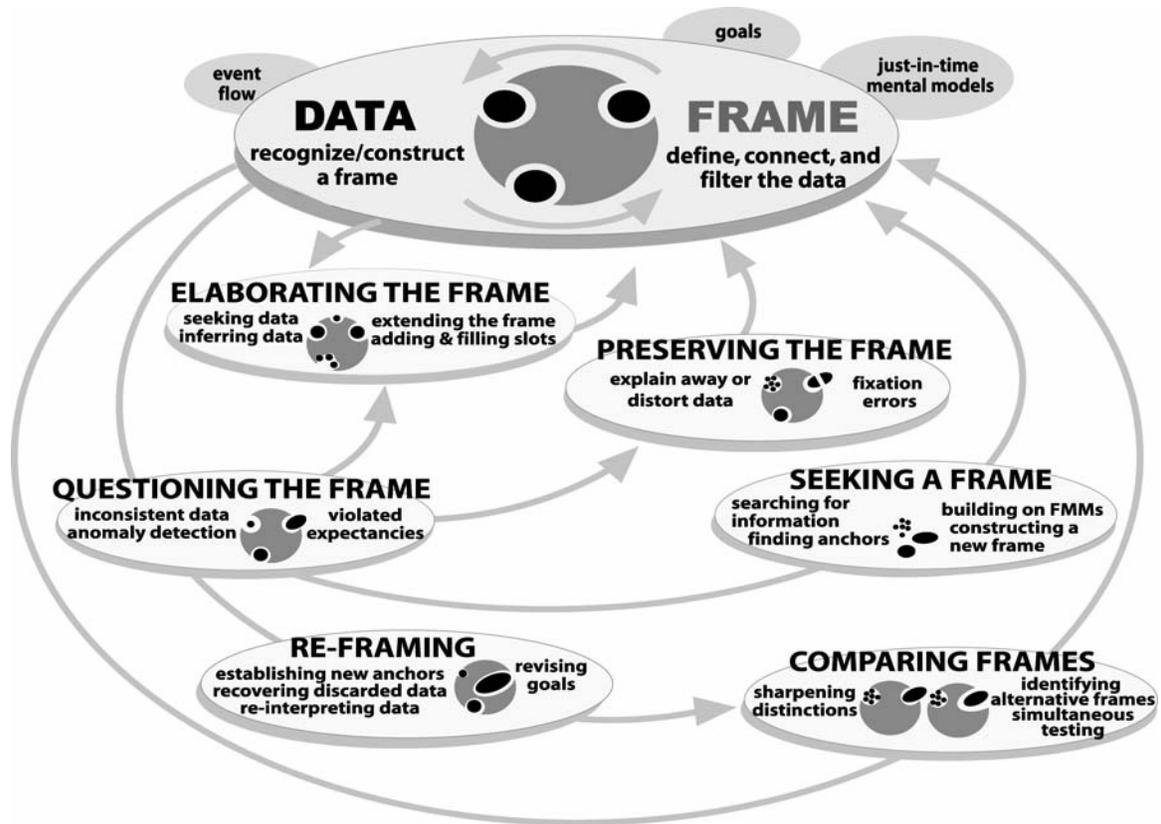


Figure 1. Data/Frame Model of Sensemaking

An advantage of using cultural dimensions to identify cultural differences and similarities is that there are a small number of dimensions to consider. The dimensions are based on central tendencies, so in lieu of more detailed information, the cultural dimensions provide a best guess at how members of other cultures are likely to behave.

However, there are several limitations to the cultural dimensions approach. The behaviors of people from other cultures often appear to be inconsistent with expectations based on cultural dimensions (Osland & Bird, 2000). For example, the U.S. is highly individualistic according to Hofstede's value dimensions; yet, Americans also donate money and volunteer their time to help various charities (Osland & Bird, 2000). Because they are based on central tendencies, the cultural dimensions cannot always explain or predict behaviors of individuals. Cultural dimensions are also not able to account for the effects of situational factors on individual behavior.

### Cultural Sensemaking Model

An alternative approach to understanding the behaviors of people from other cultures is to view a culture as a group of people with a shared set of knowledge and beliefs (Atran, Medin, & Ross, 2005; Sieck & Rasmussen, 2007). Members of a culture have mental models, or causal beliefs, about how other members of a culture will behave in a certain situation. These mental models form the basis of expectations, judgments, decisions, and behaviors. In order to understand the behaviors of other cultures, people must develop their own mental models of that culture. The cultural sensemaking model provides an example of how people can develop and apply this cultural knowledge.

Osland and Bird (2000) developed a cultural sensemaking model, which takes into account situation-specific factors. The model consists of three steps: indexing context, making attributions, and selecting schema. During *indexing context*, people actively identify contextual cues that are relevant to a given situation (e.g., roles, prior events, location). In the attribution stage, these contextual cues are

examined in order to identify an appropriate schema for the situation. Social identity (e.g., gender, ethnicity) and personal history (e.g., lived experiences) may influence the attribution process. People then select and enact a schema, or cultural script, to guide their behavior in the situation as well as how they interpret the behaviors of others.

The schema is influenced by cultural values and cultural history. Multiple cultural values may be reflected in the schema, and depending upon the situation, certain values may be more important than others. For example, Americans typically place a high value on freedom of speech; however, they may also support censorship or restricted access to information at certain times (e.g., extremely violent or sexually-explicit content). Cultural history, such as traditions or military conflicts, may also determine what schema will be selected.

As people gain greater amounts of experience making sense of cross-cultural situations, they will develop a wider repertoire of frames and schemas.

## CURRENT STUDY

The current study investigated differences in the strategies that experts and novices use to make sense of cultural surprises, and build their understanding of other cultures.

### Method

#### Participants

Sixty people participated in this study. Participants were recruited from three different populations: civilians without military experience (“lay people,”  $n = 20$ ), military personnel with Information Operations (IO) training, but no field experience (“novices,”  $n = 23$ ), and military personnel with IO training and field experience (“field,”  $n = 17$ ). Of the participants in the field group, 4 were further identified as IO “experts” (“expert”) via peer nomination, and they are treated separately from the rest of the field group (i.e. the experts are not counted in the field sample, except where mentioned explicitly).

#### Materials

The materials consisted of a written description of a scenario describing a real situation that had occurred in Kosovo. The incident had been elicited in an earlier study utilizing cognitive task analysis interview techniques. Specifically, incidents were elicited in which IO personnel interviewees had interpreted a

situation incorrectly. The scenario was constructed with very little modification to the original incident notes, with the exception of leaving off the eventual resolution of the problem that had occurred in the original incident. The scenario was presented as follows:

*Assume that you have just been assigned as the IO officer for a specified zone in Kosovo. The overall mission is to keep things safe and secure in this geographic area.*

*In an outbrief, the previous officer provided information on a Serb bus situation in your area. The Serbs are a protected minority in Kosovo, live in enclaves, and are afraid to venture forth from these enclaves. The U.S. has been escorting Serb college students out of their enclave to a college in north-central Kosovo. The students are being transported in a bus donated by Denmark, with an armored vehicle in the lead and in trail. It is very expensive to provide the full escorts. But, about 2 years before your arrival, a bomb blew up a bus, and 17 were killed. So there is a fair amount of nervousness on the part of the Serbs. A U.S. decision was made fairly recently to increase the efficiency of the escorts while maintaining safe and secure travel. Specifically, they first reduced the two armored vehicles to one for a period, and then down to zero armored vehicles but with a guard on the bus.*

*The decision was announced about two weeks after being made. The Commander decided to stop the escorts before the last day of school, so that the mindset would be to not expect escorted buses the next year. This provides a whole summer to adjust to the idea. The thinking was that a demonstration of additional air surveillance and security, along with the motivation of the students to finish the term, would carry them through. Some drop in ridership was expected, though it was assumed over time the levels would go back up. At the time of the decision, the Commander began to have the number of students riding the bus to and from school per day presented to him in daily briefs. Prior to the announcement, it was found that the buses were driving 60-80 students per day.*

*The planned change was then announced. The scheme of going from two to one to zero was described. The students/riders were shown all kinds of “gee whiz” stuff, including a UAV video, a CD show presenting aerial views, etc. They were told to wave at the UAVs, and that they could see themselves on the monitors (demonstrating the quality of the surveillance). The U.S. also issued posters saying, “We can see you.*

*KFOR anytime, anywhere – we can provide security.” The U.S. started to hear complaints from the college students themselves, from the bus drivers, and from some local leaders. The students said they were worried about access to the buses (the new routes will be different), possible cost increases and convenience. The bus drivers said they were worried about personal security. Of the leaders, the moderate Serbs gave grudging approval and cooperation, though the hardliners did not. At this point, ridership was still averaging 60-80 students/day. Rumors were heard that the students would not ride when less security was provided.*

*About two weeks after the announcement, they go from two vehicles to one vehicle. At this point, the bus drivers seem to be mollified. The ridership dropped to 50-60 students/day. Then, in another two weeks, the switch from one vehicle to zero vehicles and a lightly armed guard was implemented. The number of riders dropped down to 10 students/day. Also, the bus drivers are planning a strike because of the lack of security.*

After reading the scenario, participants were instructed to describe their understanding of the situation, and to specify in detail the kinds of things they would want to know more about and any other actions they would take. The participants were also given standard instructions to think-aloud (Ericsson & Simon, 1993). The problem scenario and response instructions were intentionally kept vague in order to minimize imposed constraints, and to allow differences in the way participants structured the problem. As in other challenging fields, IO personnel are often confronted with issues and events that are ambiguous and ill-structured including as respect to how to define the main problem.

### **Procedure**

Participants took part in the study individually in a quiet room at either 1<sup>st</sup> IO Command or the researchers' offices. The researchers explained that they were interested in how people of varying levels of expertise developed an understanding or made sense of situations. Participants were then told that they would be given a couple of scenarios, one at a time, and for each, that they would be asked to: (1) read the scenario out loud, (2) report their confidence, (3) describe their understanding of the situation in a think-aloud procedure, and (4) report their confidence again. Participants were also provided with a written copy of the confidence and think aloud instructions for reference. A cassette recorder was used to record the participants' verbalizations. The participants indicated

when they felt they had provided sufficient response to the scenario.

### **Coding**

The participants' think aloud explanations of their understanding and questioning were transcribed and coded for analysis. Two raters who were naïve as to the study hypotheses coded the participant responses. The raters first coded participant responses independently, and then determined the final codes through consensus. The coding dimensions were (rater agreement given for each code in parentheses):

- *Detect Drop*: Did the individual indicate detecting that the massive drop in ridership was the central problem in the scenario? That is, the bus drop was recognized as a critical cue that triggered some sensemaking (81%).
- *“Why stop riding?” Question*: Did the individual explicitly want to try to find out or just ask why the students had stopped riding the bus (92%)?
- *Challenge Assumption (“Who Decides?” Question)*: Did the individual explicitly challenge the assumption that riding the bus was the student's decision? That is, did the participant consider the hypothesis that someone else may be influencing the students to stop riding the bus? Note that the challenging hypothesis might still be wrong. For example, participant might hypothesize that some gang-leaders within the students are influencing the decision, but still challenge the basic assumption (92%).
- *Correct Hypothesis*: Was the correct hypothesis among those discussed by the participant? For the bus scenario, the actual state of affairs was that the mothers were not letting their students ride the bus. So, if they said anything along the lines of it being about the family, moms, etc., then they were scored as having considered the correct hypothesis (100%).
- *Culture*: Did the participant explicitly state that their understanding of the situation is based at least in part on cultural considerations?

**Table 1. Proportion of Participants Who Ask Each Question by Level of Expertise**

Key Inquiries	Experience Level			
	Lay	Novice	Field	Expert
“Why not ride?”	.10	.04	.23	.50
“Who decides?”	.05	.09	.23	.50

### Results

Most participants recognized the drop in ridership as the primary problem in the scenario (73%), and that figure did not depend on level of experience. As noted above, the protocols were coded for key kinds of inquiries participants made, in particular, inquiries that would lead directly to developing an accurate understanding of the scenario. The two key inquiry types are: “Why are the students not riding?” and “Is someone else influencing the student’s decision?” The proportions of participants who asked each of these key decisions by experience level are presented in Table 1. As shown, participants with field experience were 3 to 4 times more likely to ask one of these critical questions than were those with no field experience (trained or not),  $\chi^2(1) = 5.31, p = .02$  for the “why not ride” question, and  $\chi^2(1) = 5.31, p = .02$  for the “who decides” question. The results were not due to the experienced participants simply “knowing” the answer. Only 3 participants hypothesized the correct answer (coded liberally as “family decides” is the reason). Also, accuracy did not depend on field experience,  $\chi^2(1) = 0.04$ . However, participants with field experience (compared to no field experience) were more likely to take cultural considerations into account during the scenario,  $\chi^2(1) = 7.66, p < .05$ .

### Discussion

Experienced IO personnel were much more likely to question important aspects of their frames than laypeople and trained novices. At one level, the kinds of questions they asked were quite “basic,” lacking the obvious technical sophistication that might often be assumed to be associated with experience and expertise. Nevertheless, these simple questions were exactly the kind needed to develop a useful frame on which to base decisions and actions.

These results suggest that cultural sensemaking skills are generalizable across domains. The IO personnel with field experience were not all familiar with Serbian culture; however, based on their experiences working in other cultures and resolving cultural surprises, the field experts understood how to seek out contextual

information in order to form, test, and revise their cultural frameworks.

### IMPLICATIONS FOR TRAINING

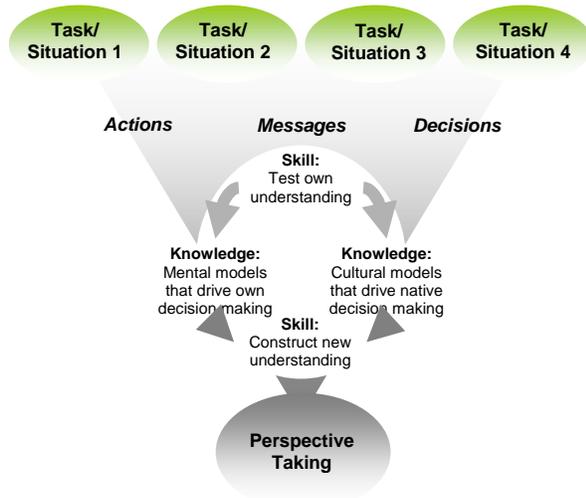
The findings of the current study have several implications for training cultural sensemaking. The most important implication is that training should focus on enhancing students’ ability to develop, test, and refine new mental models, or understandings during everyday cross-cultural interactions.

The notion that the ability to switch cultural perspectives will allow students to be successful in a variety of inter-cultural situations is not novel in and of itself (Rentsch, & Abbe, 2008). However, few if any approaches exist for developing training which enable students to attain this ability. We propose that by specifically focusing training on the cultural models that drive decision making we can enable learners to adapt their thinking and take the perspective of someone from another culture. Further, by embedding the mental models within a framework of cognitive processes that operate on them, as well as with culturally-adaptive attitudes that promote the use of these skills, we can foster the development of cultural perspective taking skills that transcend specific cultures and situations.

We believe that a cultural sensemaking framework provides an appropriate cognitive scaffold for building cultural perspective taking skills. In the context of cultural perspective taking, sensemaking entails awareness of, elaboration of, and building new understandings of the cultural models that drive decision making in the specific tasks or activities within which the cross-cultural interactions take place (see Figure 2). We propose that cultural perspective taking skills can be trained through the promotion of the following knowledge and skills:

- Basic cultural knowledge relating to the mental models that underlie decision making within a specific situation.

- Metacognitive understanding of the mental models that underlie their own decision making.
- Skills to actively seek information that establish whether someone else's mental models are different from or similar to their own.
- Skills and ability to construct a new understanding of someone else's decision making.



**Figure 2. A sensemaking approach to cultural training will provide trainees with cognitive perspective-taking skills that allow them to be culturally adaptive in their actions, messages, and decisions across a wide spectrum of cross-cultural situations.**

Perspective taking and cultural sensemaking will provide transferable skills that apply across situations involving understanding and influencing decision making in target cultures, and will facilitate cultural learning across the culturally challenging situations experienced along the path from novice to expert competency.

We have outlined a training development approach called *Situated Cultural Training* which can be used to create training that prepare students by providing them with context-specific cultural knowledge that is critical for the specific domain in which they will be performing. Situated Cultural Training compares the cultural models for a specific culture and scenario with a novice's own mental model of the culture. Learning objectives and teaching points are developed based on an analysis of the gaps and inconsistencies between cultural model and the novice expectations. Training materials are then designed to teach novices how to understand the way that members of that culture think and behave. Simulations and decision-making

exercises to provide the trainees with an opportunity to practice their cultural sensemaking skills.

The overall goal of SCT programs is to provide warfighters with the critical cultural knowledge that they need to successfully carry out tasks that require close interactions with members of other cultures. The following objectives support the overall goal:

- 1) Identify culturally and cognitively challenging tasks to include in the training program.
- 2) Develop native-expert cultural models for specified tasks.
- 3) Develop models of novice understanding of the culture and identify gaps and disconnects between the novice and native-expert models.
- 4) Develop training materials, including a scenario-based simulation, that provide students with an improved understanding and intuition for the native-expert cultural models.

The components of the development process are described in the following sections.

### **Cognitive Task Analysis to Identify Cultural Challenges**

The initial step is to determine the cultural group(s) of interest. Cognitive Task Analysis is then used to identify two to four critical tasks that are most affected by cultural issues (Crandall, Klein, & Hoffman, 2006). Based on past research, we would anticipate that areas of special interest would include negotiating with locals, overcoming language and communication barriers, reading intentions of natives, and building trust and relationships. Outcomes of this component of the process include the selection of focus areas for SCT development, and specific examples of cultural interactions for use in scenario development.

### **Cultural Network Analysis to Construct Cultural Models**

The next step is to apply Cultural Network Analysis to develop native-expert cultural models for each task (Sieck, & Rasmussen, 2007). The cultural models are culturally-shared mental models that drive decisions, assessments, and judgments in specific contexts. To elicit the cultural models, interviews are conducted with natives from the cultures, along with cultural experts, such as foreign area officers, anthropologists, and others who have spent extensive time in the country in question. This likely includes overseas trips

to reach the cultural groups of interest. Qualitative and quantitative analyses of the data are then used to develop cultural models for each critical task. The outcome of Step 2 includes native-expert cultural models of the target culture's decision making for each task/situation.

### **Cultural Sensemaking Interviews to Elicit Novice Understanding of the Cultural Models**

In the third step, research is conducted to establish novice understanding of the cultural models. Interviews are conducted with prospective students who have not who have had little exposure to the cultural group of interest. These interviews will focus on capturing the prospective students' understanding of how the cultural group makes decisions in different contexts. The results of the native-expert and novice interviews are then compared in order to identify in detail the gaps and misconceptions that novices have about the way the cultural group of interest thinks. The outcomes of Step 3 include a model of novice understanding of Middle Eastern decision making for each task. In addition, learning objectives for the training tool are developed based on the novice gaps and misconceptions with native-expert model.

### **Training Program Development**

Step 4 of SCT involves the development and validation of the training program by constructing training materials and scenarios based on the learning objectives and interview incidents. An important future direction to explore in the process is the creation of an "agent AI" model based on the expert and novice cultural models produced in Steps 2 and 3. The agent AI model simulates individual entities or groups of entities by playing animations that represent performance of a task or sequence of tasks, with the ability of the entities to perform a predetermined animation as a reaction to some event or player interaction. In a standard training program along these lines, the user would have opportunities to interact with "model" members of the cultural group in a variety of contexts, such as negotiating with crowd members at a demonstration. After each interaction, the user would receive feedback on his or her performance as well as additional lessons and teaching points.

We have successfully used the Situated Cultural Training technique as part of a research program aimed at understanding Middle Eastern crowd member and control force decision making (Sieck, McHugh, & Smith, 2007). We conducted Critical Decision Method

interviews with Middle Easterners and culturally-astute military personnel who had experience in demonstrations or riots in Iraq or Lebanon. We then developed cultural models of crowd member and military personnel decision making in crowd situations. Based on these cultural models, we developed a training package to support U.S. military personnel's ability to manage crowds in the Middle East.

Training based on cultural models, and that is situated within the specific cultural situations students will likely find themselves, we suggest, will provide the cognitive foundation needed to resolve cultural surprises. Much as the field experts who participated in the study described earlier, students who are trained using the Situated Cultural Training approach will be better able to seek out contextual information in order to form, test, and revise their cultural frameworks, and will therefore be better able to adapt their mindset to new cultures.

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