Critical Uses of Language in the Globalized Engineering Workplace and in Engineering Education

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Abstract

Given the changing demographics within the United States, as well as the internationalization of colleges of Engineering, the globalization of the workplace, and the presence of the multicultural workforce, the profession is well aware of the need for cross-cultural competence. The hidden, culture-specific meanings and intentions behind words themselves, however, are less represented in the engineering education literature. It is critical, therefore, that engineering educators, students, and professionals become consciously aware of the ways in which people from dissimilar cultural and language backgrounds tend to use language for different meanings, whether speaking their native language or a foreign language. Language use is such that speakers in these circumstances often do not know that they are misunderstanding the intentions behind the words that the other is using. Instead, they attribute negative personality characteristics to the person, or to the group to which the person belongs. This misunderstanding often leads to harmful emotional reactions, which can ruin collaboration and cost millions of dollars. Yet, professionals can counteract any such problems by drawing on recent findings in specialized subfields of linguistics, which address the culture-specific use of language to create intention, meaning, and ultimately communication.

Thus, this article offers information about the ways in which language use differs across cultures and threatens successful communication. It provides specific examples, culled from contemporary research, to illustrate this phenomenon in Arabic, Chinese, French, German, Japanese, Korean, Portuguese, and Spanish. Strategies for successful interaction with people from differing backgrounds are presented as well.

Introduction: Cross-cultural Competence, Demographics, and Engineering

Sometimes, even if they are speaking the same language, participants in a spoken or written interaction will "mis-communicate." The more different their backgrounds, experiences, and the cultures from which they come, the more likely it is that misunderstanding and

Proceedings of the 2013 ASEE Gulf-Southwest Annual Conference,
The University of Texas at Arlington, March 21 – 23, 2013.

miscommunication will occur. If their native language is not the same, the potential for misunderstanding is markedly increased.

What is most insidious is the fact that often the participants will not even know they are failing to communicate. Instead, they will ascribe negative personality traits and behavior to each other. That is because different cultures tend to assign differing interpretations to specific words, phrases, texts, and situations. Thus, what may be polite interaction in one culture may be an insult in another. Furthermore, although Participant A may have learned Participant B's language and speak it well with him or her, nevertheless, speaking the same language does not mean assigning the same *meanings* to spoken or written words. As Blum-Kulka and Oshtain say, "[S]econd language speakers might fail to communicate effectively, *even when they have an excellent grammatical and lexical command of the target language*"[1] (my italics). In other words, mastery of grammar and vocabulary do not ensure successful communication.

It is no secret that cross-cultural competence is critical for the profession. Engineering professionals realize that, in the engineering workplace and in engineering education, professionals, students, and faculty come into frequent contact with others who come from different backgrounds, both abroad and at home, and they know that cross-cultural competence is necessary for successful educational and business transactions[2,3,4].

First, engineering endeavors are increasingly international and collaborative in nature. Indeed, according to ENR.com, the top 200 international engineering design firms are located in twenty-four countries: Australia, The Netherlands, U.S.A., U.K., Egypt, Canada, Spain, Singapore, France, Finland, Denmark, Japan, China, Sweden, Italy, Australia, Taiwan, Lebanon, S. Korea, Belgium, Germany, Austria, Ireland, and Kuwait [5]. According to Devex, "[r]ecent decades have seen a growing involvement of major engineering firms in international development projects. The world's developing communities have become clients under a corporate portfolio that includes both mega-infrastructure undertakings and small projects that provide basic services to impoverished villages"[6].

Second, paradoxically, the international nature of the workplace may be found in one's own "cultural backyard." There is a better understanding that multicultural diversity occurs both within societies, as well as between them[7,8]. For example, California (including the Los Angeles and San Francisco metropolitan areas) has quite possibly the largest population of Vietnamese heritage citizens outside of Vietnam: 380,000, while Houston and Dallas-Fort Worth combined boast a population of over 110,000 inhabitants of Vietnamese ancestry[9].

Countries and cities alike show this trend. According to the U.S. Government Census, "more than one in five people in the U.S. are first or second generation"[10.] Similarly, the U.S. workforce is also becoming more diverse. For example, between 1980 and 2010 the percentage of "Whites" declined from 82% to 72%, with a projected decline to 63% by 2020, while, conversely,

minorities, defined as African-Americans, Hispanics/Latinos, Asian-Americans, and Native Americans rose from 18% to 28% and are projected to increase to 37% of the population by 2020"[11]. At the same time, the least educated are among the fastest growing segments of the population.

Similar situations exist in the United Kingdom. For example, "it is estimated that over 300 languages are spoken in London"[12], and by the 2001 census "30% of London residents had been born outside England"[13]. As for the U.K. itself, in 2011 the five most common countries of birth of inhabitants of the United Kingdom were Germany, the Republic of Ireland, Pakistan, India, and Poland[14]. In addition, "there were an estimated 988,000 EU8 (Czech Republic, Estonia, Poland, Hungary, Latvia, Lithuania, Slovakia and Slovenia) born residents in the UK," as well as "an estimated 141,000 Romanian and Bulgarian born residents in the U.K."[14].

Therefore, DeGraaff and Ravesteijn argue for "more 'complete engineers', i.e. engineers with sophisticated and practical knowledge, not of technology alone, but of 'technology and society'"[15].

Third, engineering education programs are also aware of this reality. Because of the increasingly international and collaborative nature of some engineering endeavors, educators are ever more insistent that engineers need excellent cross-cultural social skills. "Globalization presents engineering educators with new challenges as they face the need for graduates who can function comfortably in an increasingly distributed team context which crosses country and cultural boundaries"[16].

Furthermore, both students and professors themselves comprise a diversity that is widely acknowledged. If, for example, one "googles" the keywords "engineering school diversity professor student," one will easily find a number of universities addressing the diversity of their student populations. When students work together, "it remains a big challenge for students with different educational backgrounds, practical experience and ethnic backgrounds, to coordinate their knowledge, thinking and activities"[17]. In addition, "googling" "diverse faculty engineering schools" calls up a number of universities affirming the diversity of the faculty.

Thus, it is clear that on a number of levels engineering education is facing and attempting to address the need for effective cross-cultural competence: because of demographics in one's home country, because of student-professor diversity, and because of the internationalization of engineering and the global workplace[16,17]. There are many aspects to the complex issue of cross-cultural competence that engineers ideally should possess, ranging from language proficiency, to an understanding of nonverbal behavior, to knowledge of various culture-specific attitudes and behaviors with regard to time, etc.[8].

This article builds on and expands this understanding of cross-cultural competence needs in the

engineering profession by addressing specific language and linguistic problems that may surface during spoken and written interactions. Examples culled from a variety of languages are described and explained in order to demonstrate how engineering students, faculty, and professionals can begin judging whether or not miscommunication may be occurring in meetings, collaborations, or the classroom. It describes ways one can anticipate and approach situations in which "people talk differently, when speaking the same language." Resources and tools for further reading are proposed, should one need to expand one's knowledge of a specific culture, with whose members one is interacting.

Language Use and Miscommunication across Cultures

Every human being tends to think his or her meanings are the "right" meanings and the "only" meanings. The problem is "the hazard of *assuming similarity instead of difference"*[18]. Through the words, phrases, and conversations from different languages that are discussed below, it will become clear how important it is to assume difference instead of similarity, while still exhibiting good will toward the other.

Words

Words display culture-specific meaning, and people can easily misunderstand another's use of a word. In this section words denoting appropriate human behavior and interaction ('politeness,' 'little brother,' 'precious,' 'respectable,' 'worthless,' 'friend,' 'clique'), physical objects and spaces ('watch' and 'garage'), and attitudes toward reality ('fate,' 'early,' 'late') will be presented.

'Politeness' in the Chinese and Japanese Cultures, 'Little Brother,' 'Precious,' 'Respectable,' and 'Worthless' in the Chinese Culture

In the Chinese culture "denigrating self and respecting other remain at the core of the modern conception of *lǐmào*, or politeness"[19]. It would never occur to a U.S. American to define politeness in this way; denigrating oneself while respecting the other is not a foundational definition of most if not all forms of politeness in the English and U.S. American cultures. Furthermore, it would also not occur to a U.S. American to use the words "little brother," "precious," "respectable," and "worthless" when introducing him- or herself. In many parts of the country, "casual friendliness" is the modus operandi in our interactions, with nods towards interest in the other ("Nice to meet you," for example).

Therefore, polite Chinese introductions come across as strange in the North American setting. In the example below two men are meeting and introducing themselves. The first calls himself little brother to show that he is respecting the other, because in his culture a little brother has less status than a big brother. (Again, one is to self-denigrate by showing modesty about one's own

self.) He also provides his last name, and not his first, the latter of which would be highly inappropriate. Furthermore, he does not introduce himself first, but rather asks for the other's name first. When asking for the other's name, the words "precious" and "respectable" are used, in order to "elevate" the other's position. The other denigrates himself by calling his last name "worthless."
M: Your precious surname?
S: Little brother's surname is Li. Your respectable surname?
M: My worthless surname is Zhang[19].

One can only imagine the effrontery when a U.S. American businessman, not knowing these conventions, offers his own name first and then calls a Chinese colleague, whom he has just met, by his first name. From the American's point of view, the relationship seems to get off to a good start, while from the perspective of the Chinese man, that is not the case. In fact, just the opposite impression is made on the Chinese speaker[20].

Finally, *lǐmào* or politeness includes "attitudinal warmth," "demonstration of kindness, consideration, and hospitality to other," "refinement," and "self's behaviour to other which meets certain standards"[19]. Without these particular senses of relationship, politeness is not accomplished in Chinese.

Politeness is very similar in the Japanese culture, where successful politeness occurs when the person the speaker is talking to, the addressee, "thinks a speaker is showing he/she thinks well of the addressee or not too highly of him/herself"[21]:

> For example, a secretary will often use so-called 'humble forms' (*kenjoo-go*) when referring to his boss if someone from outside the company calls to speak to the boss. Politeness arises from the use of 'humble forms' by the secretary in this case, not because it shows the addressee is outside the secretary's group (exclusion), but because the secretary shows he thinks his group (including his boss) occupies a different position to that of the addressee (that is, distinction). In other words, the secretary, as a representative of the people in that company (including the boss), shows they do not think too highly of themselves[21].

'Friend' in the French Culture

Another important word is 'friend.' Most human beings have relationships with people to whom they are not related by bloodline or marriage. Yet the meaning of the word 'friend' varies considerably from culture to culture. In France a true French friend is expected to intervene in one's life, while a true friend in the United States is expected to allow one one's autonomy. According to Carroll, a French person will tell a friend about a problem he or she is having, for

example feeling exhaustion from work, and the friend will insist on getting involved and helping, saying for example: "I'll pick you up at eight and we'll go to the movies. You're beat, you need to relax. I'm not going to stay here doing nothing while you work yourself to death right before my eyes"[22]. After several protests, the person with the problem will give in.

But what that same behavior evokes in a U.S. American is complete annoyance. As Carroll notes, "an American would undoubtedly shy away from such authority. It would represent an unbearable invasion of the other person's private life…"[22]. In fact, she cites an American who thought just that and said the following: "I like L. very much, and we're good friends, but she has one fault that drives me crazy. Yesterday, for example, I was heading for a meeting and I ran into her. … She offered to take care of Jackie at her house whenever I want, so that I can catch my breath a bit … as if I were incapable of taking care of my daughter and my work at the same time"[22].

'Clique' in the German Culture

When Germans and American speak with each other, they also often "mis-speak." The word 'clique' is a case in point, where the German equivalent indicates a group of lifelong friends, and the U.S. American use is more negatively weighted in connotation, as a group of friends who wish to exclude others. A German *Clique* is a group with whom you feel safe and secure, and it refers to the people whom an American might call "my friends." A German speaker could very well say, for example, "I go out with my clique." This is how one young German described a *Clique*:

> For years I've been a part of a pretty large group of about twenty people [in Germany] who enjoy each other and continue to meet with each other, former classmates in school or my band, and the people meet each other all the time, and everyone knows everything about the other-up to a certain point that everyone knows how to respect, and you can talk about almost everything. You feel safe and secure…[23].

'Watch,' 'Early,' 'Late' in the Portuguese-Speaking Brazilian Culture

Words denoting objects and time can have various connotations in their definitions, too. It is known to many U.S. Americans that many Spanish-speaking cultures have a different relationship to time from more Anglo-type cultures. The word *mañana,* meaning 'tomorrow,' for example, also exists in Portuguese as *manha,* and the relationship to time in Brazil is also different from that in the Anglo areas of the United States.

Studies have found that in Portuguese the word 'watch' (as in 'wristwatch') denotes approximate time instead of exact time[24]. They have found that Brazilians consult their watches less than

United States inhabitants do. They have also found that Brazilians' watches are less accurate, so a watch does not have to be as accurate in the Brazilian definition of the object as it does in the North American. In addition, with regard to the attitude toward the time that the watches tell, "Brazilians were more flexible in their definitions of the words 'early' and 'late,' … [and] Brazilians expressed less regret over being late"[24]. Another of the important findings was that U.S. citizens "had more negative overall impressions of a person who is frequently late"[24].

Naturally, this could lead to cross-cultural miscommunication, the U.S. citizens perceiving their southern counterparts negatively as not prompt, punctual, or on time, while Brazilians could perceive those in North America as fixated on punctuality over, for example, relationships[24]. Of course, now that the digital world has taken over, Portuguese cell phones are as exact in their telling of time as are those in the United States.

'Garage' in the Columbian Culture

Another interesting word has to do with physical space, a *garaje*. In some houses in Bogota, Columbia the garage seems to be a part of the living room, with no wall at all between the spaces, or at most a short divider. While it is true that people in both the U.S. and Columbia can be proud of their cars and keep them spotless in very clean garages, nevertheless upon seeing the cars seemingly "on display"[25], American exchange students thought of their Bogotan hosts as ostentatious and showy. However, what they did not realize is that the garage had "the additional function of providing party space for dances and play space for younger children. Therefore, by blending the garage into the living room a greater expanse is possible inside the house"[25]. Especially if space is at a premium, this would make sense.

'Fate' in the Russian Culture

Finally, there are key words that have similar and yet very different meanings in different languages. The Russian word for 'fate' is one such word that some would say even defines the Russian character. Wierzbicka provides a lengthy, nuanced discussion of the Russian meaning and interpretation inherent in the Russian word *sud'ba.* Part of her description is the following:

> *Sud'ba* implies neither a "good" or meaningful outcome, like 'destiny,' nor a "bad" or meaningless outcome, like 'fate;' nor is it totally neutral between good and bad;… it hints that one can expect more bad things than good things to happen to one, but it presents human life as incomprehensible (as well as uncontrollable) rather than as meaningless and necessarily tragic. … It presents life as not subject to the individual's control, while evoking the idea of an external controller, but it leaves the possibility open that the external control may come from other people – for example, from social tyranny or political oppression – rather than from other-worldly sources[26].

Thus, it would be incongruous to think of one as "master of his or her fate," yet that is exactly

what the North American value system assumes: we are in control of what happens to us.

It is thus easy to see that speaking the language of the other is not simply memorizing a list of words with their equivalents in one's native language. In fact, the implication is that vocabulary lists are a kind of pitfall, since there are very few words that have a one-to-one correspondence across languages, and vocabulary lists specify no culture-specific connotations. Similar issues exist with phrases.

Phrases

If words provide potential pitfalls for communicating across cultures, phrases and strings of words are equally dangerous territory, maybe even more so. 'Speech acts' is a term given to phrases, sentences, or utterances that comprise a verbal behavior. According to Austin[27], by our words we are actually "doing something." In other words, what we say can be an action: a warning, a promise, or thanks. Additional examples include comforting, allowing, disputing, greeting, advising, among others.

Speech acts are particularly helpful in understanding cross-cultural communication, because if one extrapolates the basic ideas from Austin, one comes to see that a sentence or utterance has at least three levels of interpretation: a literal meaning, the speaker's interpretation, and the listener's interpretation, also called 'locution' (the literal meaning), the 'illocution' (the speaker's interpretation), and the 'perlocution' (effect on the listener, or listener's interpretation)[27]. These three levels work fine, unless of course, the speaker's interpretation differs from the listener's, a problem that often occurs in cross-cultural communication. Thus, one may understand the words "How are you?" But a cashier uttering them at a supermarket in Texas, U.S.A. will use them as a greeting and conversation opener, while a German will not understand the meaning, because one opens conversations at grocery stores with the German equivalent of 'hello' or 'good day' (more on that topic below).

In this section, examples of speech acts are provided, including the acts of welcoming, understating an opinion, inviting someone to dinner, opening a conversation, hedging, overstating a threat, or making a request. All can lead to gross misinterpretations.

Welcoming in Arabic

In the United States, when we welcome someone into our home, we might say something like the following: "I am delighted to see you. Please make yourself at home." These words are the speech act of welcoming. However, when an Arabic speaker welcomes one into his home, he might mean exactly these words, but instead say something like the following: *"*You have extremely honoured me by coming into my abode. … I am not worthy of it. This house is yours; you can burn it if you wish. My children are also at your disposal; I would sacrifice them all for

your pleasure. What a blessed day this is, now that the light of your countenance has shone upon us"[28].

The Arabic speaker does not, of course, mean what he is saying. Nevertheless, the North American is taken somewhat aback, and it is quite possible that misunderstanding occurs. The North American thinks that the Arabic speaker exaggerates too much and is, perhaps, volatile. In some situations, the North American might take the Arabic speaker at his word.

Understanding in English

On the other hand, Arabic speakers misunderstand the use of understatement in English and the fact that the English speaker does not say all that he or she means. Thus, when a speaker of British or Australian English wishes to say that something would be very silly, she or he might use the word 'rather:' "His appearance at the Baronet's must have been rather a silly one"[28]. Similarly, a U.S. American who says "That's a bit much" could mean "That is too much."

Thus, the problems arise on both sides: the overstatement of the Arabic speaker seems too effusive, dishonest, or too emotional to the North American, while the understatement of the English speaker is very frustrating to the Arabic speaker, for whom it seems that English speakers never say what they mean, and, from his point of view, have no artistry in their speech.

Chinese Invitation to Dinner

If the Chinese must elevate the other and denigrate the self in their talk, then in situations of invitations to dinner, the person who is being invited must at first refuse, saying it will be too much trouble for the host, while the host must insist several times, saying that it will be no trouble at all. Only then can the invitee accept.

In the following example, several talk exchanges are required in order for a prospective mother-in-law to make, and a prospective son-in-law to accept, an invitation to come to dinner. There must be several offers by the mother-in-law and several refusals by the son-in-law before it is considered polite for him to accept. The mother-in-law will say things like: "Come by for dinner tomorrow," while the prospective son-in-law will say things like: "I can't come. It's too much trouble for you.[21]" The mother-in-law will retort with the following arguments: "Trouble? Nothing! The food is already made! Whether you come or not, it's the same meal! You have to come. If you do not, I will feel offended"[19]. The son-in-law will eventually accept the invitation. Accepting too soon is not acceptable. However, the interpretation a North American might have is that the prospective mother-in-law is imposing her will on the prospective son-in-law, and he is acting hypocritically, because he wants to accept the invitation and does not until prodded. Yet neither is the case. The American interpretation would never occur to a Chinese speaker.

Conversely, a Chinese speaker would misinterpret a simpler invitation and acceptance by a North American as impolite, maybe even impudent. Yet North American politeness definitions allow, even require, one to accept a similar invitation more readily.

'Hi, how are you?' in American English

'Hi, how are you?' is a phrase that never ceases to stump German speakers who come to the Midwestern or Southern United States. When they hear a cashier say it in a grocery store, they think the cashier is exceptionally interested in them[29].

In all reality, however, when one steps up to the cashier after having waited in line at the grocery store to pay for one's groceries, the cashier is actually greeting the customer and indicating the opening of the interaction with this phrase. Essentially, she is saying, "I am greeting you. It is now your turn. You may speak to me." If the customer were to speak to her before that point, that talk would be considered an interruption of the ongoing interaction between the cashier and the customer who is in line ahead.

A German cashier, however, does not greet with such a speech act and instead will say *Hallo* ('hello') or *Guten Tag/Morgen* ('good day/morning') and will reserve 'Hi, how are you?' for people she or he already knows. Thus, the young German man who came to his turn at the supermarket in Texas heard the young woman cashier ask him how he was. He did not know what to think, and so interpreted her greeting as an overture to getting to know him better. He thought that since he and she were both young, of similar age, and therefore both probably single, she might be indicating interest in him. He then promptly began telling her about his life, specifically his recent root canal problem. Of course, the cashier had such a confused look on her face that he knew something had gone wrong.

His take-away interpretation was that Americans are superficial and don't mean what they say. Conversely, Americans perceive Germans as rude, because they do not make use of the same conversational routine formulas that Americans do[29].

Hedging in Korean

Koreans, like the Chinese and the Japanese, are not supposed to self-aggrandize. So when they are asked whether they can do something well, if they can, they will not come right out and say it. Instead, they will hedge, demonstrating modesty about their acquired knowledge and their abilities. Thus, when asked whether he knew how to keep score in bowling, a Korean speaker answered with "Yeah, approximately." In this case it was a Korean tutor in computer programming who was helping a North American student work on creating a computer program to keep bowling scores. The tutor was very familiar with bowling, but responded as stated above. The student thought that the tutor did not know much about bowling, and this misunderstanding

led to further miscommunication as the tutor tried to talk the student through computer strokes when attempting to program scores for spares and strikes[30].

Overstating a Threat in Russian

Sometimes misunderstanding speech acts can cause wars, or if not wars, at least cold wars. In Russian there is the story of Soviet Premier Nikita Khrushchev talking about the advantages of communism over capitalism in 1956, stating, in Russian, that "Мы вас похороним," i.e. "We will bury you!"[31]. It was not, however, a threat to bomb with a nuclear attack, as the Americans thought, but rather, "We'll be here even when you're gone."

Requesting in Spanish

Anyone who has watched caricatures of Mexican Spanish speakers speaking English might recall the speakers saying something about "my leetle dog" or "my leetle burro," meaning "my little dog" and "my little burro." However, they will not realize that what is actually going on is the use of the diminutive in Spanish. Thus, Lola becomes Lolita in the diminutive form. In requests, too, the diminutive is often "used to mitigate the request by softening its force"[32]. Thus, one will not say, "Will you do me a favor?" ("¿Me haces un favor?"). Instead, one will ask, "Will you do me a little favor?" "¿Me haces un favorcito?" This is considered nicer, more polite, more appropriate. It has nothing at all to do with the magnitude (or lack thereof) of the favor. It may be a big favor, but be called a little one out of politeness, in order to soften the "blow" of the request. So when a Spanish speaker asks for a big request by asking, "Will you do me a little favor?" he or she is not lying, but rather softening the harsh tone of a request.

If words and phrases can cause problems in communication, whole texts – conversations, for example – can cause negative stereotypes as well.

Conversations

When human beings speak, they have an idea of what is to be said first, second, third, and so on. When one goes into a restaurant in North America, one may be greeted by a host or hostess and be asked, "How many?" and then, "What's the name, please?" and finally, "It'll be about fifteen minutes." After that, if the event happens in a predictable way, certain other things will be said as the diners are being seated, and as the waitperson comes to the table. All through the meal and up until the diners leave, certain predictable expressions will be uttered. It is almost as if the speakers follow a "restaurant script" for getting through the meal with their customer/host/waitperson interactions. This kind of background knowledge is indeed called a script, and a whole theory has evolved around it called script, or schema, theory (Schank and Abelson)[33]. It is as if we know what we are going to say and hear before we begin a routine interaction. The words may not be exactly the same every time, and sometimes the interaction

does not follow the script, but native speakers know the script anyway.

So, too, in conversation, there are ways to structure the conversation and determine what comes first, what kinds of topics can be addressed and how, and how one must interact with the others in the conversations. The following section presents three cases in point: the structure of conversations in Asian cultures, heated debates in German and Swiss conversations, and the enthusiastic overlapping that occurs when the French speak in casual conversations.

Asian Conversational Structure

One could say that the Chinese need to self-denigrate carries over into conversational structure, because of the fact that in a conversation a Chinese speaker will provide reasons for his or her thesis before providing the thesis. In a business conversation, for example, the Chinese speaker will begin with the particulars, including background or reasons, and conclude with the main point, comment, or action suggested. This is because the "Asian speaker feels uncomfortable putting his suggestion first before he has given his reasoning"[20]. The speaker wants to provide a reason for his impositions on the other, to mitigate the (negative) impact of the suggestion or comment.

The North American, on the other hand, will first state the suggestion, comment, or main point, then the reasons and particulars. When this happens, each side cannot follow each other, and the Asians think the North Americans are rude, while the North Americans reinforce their stereotype of the "inscrutable" Asian[20].

Heated Debate in Germany and Switzerland

The scripts that one uses determine, to a great extent, not only the sequence of verbal and non-verbal behavior in a speech event, but also the content and the ways of speaking that are considered appropriate.

Even between North Americans and Northern Europeans, great differences exist. German and Swiss speakers of German exhibit conversational traits that North Americans find repugnant, and vice versa. In many German environments it is considered polite and in good form, as well as a good way to get to know people, to argue politics and controversial issues. These heated debates are considered good fun, and all are expected to take part[34,35]. In the U.S. middle-class culture, one gets to know another by stressing commonalities. Thus North Americans are often dismayed and call the German speakers rude for confronting them, while the German speakers think of the North Americans as shallow, because all they want to discuss in those same situations is what they have in common, sports or cars or family background, rather than "topics of substance"[29].

French Overlapping

The interpretation of the North Americans in French culture is not that they are shallow (how the Germans interpret them), but that they are rather dull and uninterested. In French culture it is considered appropriate and right to overlap (interrupt) when engaged in a lively discussion with friends. One must figuratively "jump into" the conversation. In fact, what U.S. Americans consider rude is, in France, "proof of spontaneity, enthusiasm, and warmth, a source of unpredictability, interest and stimulation, a call for participation and pleasure"[22]. However, "for an unsuspecting American, … the rapidity of the exchange may be interpreted as a series of interruptions (and therefore an indication of aggression) and the tone of the voice as an expression of anger"[22]. It is for this reason that U.S. Americans often do think of the French as rude, while the French think of Americans as uninterested dullards.

Bridging the Gaps

Awareness of the ways in which language can cause problems when working with engineering students, educators, or professionals is important, but not sufficient, to successful communication. Although the path to intercultural communication is fraught with obstacles, nevertheless the obstacles can be overcome, and as people get to know each other, they also give each other the benefit of the doubt, especially if they realize the person is from a different background, and they make clear they are trying to meet common goals.

Some overarching suggestions should help readers apply, with a form of meta-awareness, the above understanding to cross-cultural situations in which they find themselves. Here are a few helpful hints:

1. One should remember that proper, acceptable, appropriate use of language is not rooted in some natural law of science or the universe, but rather in variable human culture.

2. Not all speakers of a language will exhibit the same linguistic behaviors all the time, nor will their interpretations of those words always be the same in similar situations. There may be regional differences, or outside influences. Some may live not in their heritage country, but in the United States, for instance.

3. Above all, one should not "assume" she or he knows the other's intended meaning. It is critical that one always also not assume that the behavior or language of the other is fraught with ill intention or ill will. One must "check and clarify the meaning of words and phrases, and test [his/her] own understanding"[30].

4. If possible, it helps immensely to get to know the "other" – the person who is different from one. Specifically, it helps to build shared knowledge by disclosing and eliciting key information, "including the intentions and broader context as to why something is said or

requested, in order to help build trust and mutual understanding and to reduce uncertainty"[30].

5. Finally, easily accessible, readily comprehensible resources are critical. In addition to the sources in the references below, one can take advantage of key search terms in google scholar, using the name of a language or cultural group coupled with one or more of these words or phrases: 'intercultural communication,' 'pragmatics,' 'conversation analysis,' 'intercultural misunderstanding,' 'discourse,' 'discourse analysis,' 'speech acts,' 'communication patterns,' and 'cultural anthropology.'

Once rapport and a certain level of trust have been established, one can actually ask another how he or she interprets various words, phrases, objects, spaces, and behaviors. The following strategies have been gleaned from a number of sources, but especially from Carl Rogers[36], to elicit a speaker's true feelings, beliefs, values, and attitudes.

1. In order to signify understanding and encourage further talk, one can acknowledge comprehension by providing back-channel behavior ("m-hm," "I see," nodding one's head as appropriate) and by repeating what the other has said.

2. To seek clarification, interpret, check understanding, and test perceptions, one can do several speech acts: ask what the other means ("What does X mean?"), ask if the other can say more about the situation ("Can you tell me more about it?"), and request an example or experience ("Can you tell me about something that happened to make you think that?" or "Can you give me an example?").

3. To confirm understanding, one should clarify the interpretations of the other by again paraphrasing ("When you say X, you also mean Y, don't you?") and summarizing ("Let me see if I've understood you correctly. You said that…").

Conclusion

Learning about another cultural group and their ways of talking, acting, and interpreting the world doesn't have to take all of one's time. An engineer is busy as it is. Instead, it can be a well chosen article that helps one understand and, for a moment, "walk in the shoes of the other," so that the goal one wishes to accomplish with the other will come to successful fruition, whether it be to teach, to learn, or to collaborate. Avoiding the pitfalls of uninformed cross-cultural language use makes communication effective and successful. It can, literally, help people build bridges.

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