

Culture, Politeness and Directive Compliance: Does Saying “Please” Make a Difference?

Dr. Christopher A. Miller

Dr. Kip Smith

Smart Information Flow Technologies

211 First Ave N., Suite 300

Minneapolis, MN 55108 USA

{cmiller, ksmith}@sift.info

SUMMARY

We argue that traditional cultural factors (from Hofstede, Nisbett, etc.) are too abstract to provide good, predictive models of important human performance behaviours such as compliance with directives. Instead, we focus on culture-specific social interaction behaviours in language, gesture, etc. (i.e., "etiquette") as a more concrete and quantifiable bridge between abstract cultural factors and human performance. We describe a computational model of etiquette and face threat perception we have developed, called CECAEDA (Computational Effects of Cultural Attributes and Etiquette on Directive Adherence). CECAEDA consists of four parts: (1) a culturally universal model of politeness perceptions, their causes and effects, (2) a culturally universal model of the chain from perception through decision making to the execution of compliance behaviours in response to directives, (3) a culturally universal set of hypotheses about how politeness perceptions affect directive compliance, and (4) a set of hypotheses about how cultural factors (specifically, those proposed by Hofstede [1] affect etiquette perceptions and, thus, directive compliance in culture-specific ways. Each component is discussed in detail, followed by a brief presentation of our research testbed and paradigm for evaluating CECAEDA.

1.0 INTRODUCTION

The need to examine cultural factors that affect human performance has perhaps never been greater. As coalition forces interact ever more extensively with groups of different cultures, as the forces themselves becomes more culturally diversified, and as training needs necessarily change, we need to know (and, ideally, to be able to develop predictive models of) what cultural factors have an impact on why one human operator performs differently than another.

Substantial theoretical and basic research exists on identifying cultural patterns (e.g., [1,2]) and on how cultural factors affect cognitive processes [3], but none provides a direct link from these factors to human performance, nor is readily amenable to detailed and specific performance modelling. An additional challenge lies in finding performance phenomena that are both predictable from cultural factors and are worth predicting—that is, have valuable outcomes. There is little doubt that cultural factors do affect performance. For example, Nisbett has found that North Americans and South East Asians see different objects in the same picture due to what he calls field dependence [3], implying differences in pattern recognition, problem solving, and decision making skills vary among cultures, all of which should contribute heavily to

performance. But it has proven difficult to trace the chain of causality from these differences to actual, valuable behavioural differences. This is particularly true of the highly concrete, contextually-dependent and individualized interactions that represent a huge proportion (arguably, the vast majority) of military interactions: *directive interactions*—where one offers an instruction, command, request or piece of advice in the hopes of eliciting a specific response.

We suggest that the way forward in developing models of the interaction of cultural factors and human performance may be to find a “bridge”—a quantifiable, explicit, culture-specific and above all, modelable phenomenon that can be related to abstract cultural factors on the one hand, and more directly to human performance on the other. We believe that human interaction “etiquette” is such a phenomenon.

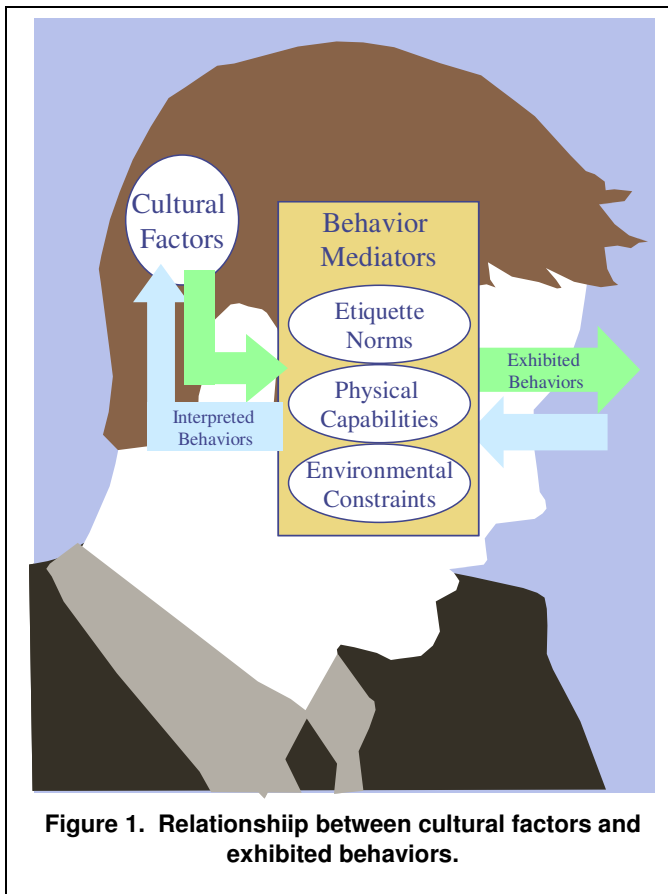
2.0 ETIQUETTE, CULTURE AND DIRECTIVE COMPLIANCE

The terms “etiquette” and “politeness” are likely to evoke notions of formal courtesies and which dinner fork to use—considerations of limited use in military applications. But *politeness* is a well-studied phenomenon in anthropology, sociology and linguistics having to do with the processes by which we determine and manage the “face threat” inherent in interaction between individuals (cf. [4,5]). Politeness is the method by which we signal, interpret, maintain and alter power relationships, familiarity relationships and interpretations of the degree of imposition of an act. We use the term *etiquette* in the sense of protocol—a usually unwritten social “code” by which we signal and interpret meanings. Emily Post’s “etiquette” about place settings at a fine dinner is just one of many types of “etiquettes” with which we are all familiar—other more common ones include who gets to speak first in a contextual interaction, what sorts of address are suitable to a stranger vs. an old friend, and what it “means” when a colleague stops greeting you in the hallway at work.

Politeness is therefore a different type or level of “cultural factor” than the more abstract categories proposed by Nisbett, Hofstede and others. Their cultural factors represent deep-seated and highly abstract attributes. For example, Hofstede’s “Power Distance Index” (PDI) refers to the degree a society allows equality or inequality among its members. This attribute only very indirectly describes the attitudes, much less the responses that a specific individual might exhibit. If we try to use such abstract attributes to predict individual behaviour to a request, we might well find correlations, but these are undoubtedly more powerfully (and therefore more predictably) influenced by more immediate (yet still culture-specific) attributes of the interaction—such as the degree of deference (relative to that culture) included in that request, the specific power and familiarity relationships between the interactants, the perceived degree of imposition of the request, etc. The relationship between etiquette and these deeper “cultural factors” is illustrated in Figure 1.

In our work, we refer to the chain of influence depicted loosely in Figure 1 as our *CECAEDA model*—for *Computable Effects of Cultural Attributes and Etiquette on Directive Adherence*. This chain refers to the hypothesized links between deep-rooted cultural factors which influence the psychological, cognitive and affective patterns of members of that culture, which in turn impact their perceptions of the etiquette and relationships expressed by politeness behaviours in specific interactions, which in turn impact decisions and subsequent actions in response to those directives.

A simple example may clarify: Hofstede’s PDI factor is a description of a culture and may be broadly predictive of performance and behaviour within that culture. But specific individuals in specific situations in a culture will detect and exhibit specific power relationships via the etiquette framework that is available in that culture. How important power differences are, and how aware of them one is (how much energy is spent detecting and managing them) may all be highly correlated with the PDI attribute of one’s culture. But in specific interactions, the way I determine that another individual does, in fact, have power over me, (an attribute which may have high correlation with how I choose to behave in this specific instance) is a function



of the etiquette of verbal and non-verbal behaviours that the individual uses—and of my knowledge and interpretation of those etiquette choices.

In work we are now conducting under a Small Business Innovation Research grant from the U.S. Air Force, we are focusing on a very specific, though pervasive and critical, human performance behaviour: the way humans interact with *directives*. Directives are statements about what one should or must do; that is, a statement “directing” the hearer to perform in some way. Note, though, that the compelling force of a directive may vary (e.g., command vs. request vs. instruction vs. advice) and may come from a variety of sources or motivations (e.g., beseeching, coercing, remonstrating, instructing). In military settings, directives are the essence of command. In training, they involve the provision of advice or instruction. The type of cultural factors that may have the most immediate impact on an individual’s response to a directive are not (or at least not directly) the abstract attributes of his or her culture in general, but rather the specific, culturally-determined manifestation of the etiquette with which the directive is presented. This is not to say that the abstract cultural factors are irrelevant—far from it. As detailed below, we suspect that

cultural factors determine sensitivity to, weighting of, and even perhaps the range of etiquette markers available for various purposes in different cultures.

In the remainder of this document, we will describe our CECAEDA model in more detail and provide some specific, testable predictions derived from it about the relationships between cultural factors, directive etiquette and directive compliance behaviour. We are currently in the midst of a two-year project to test some of these hypotheses experimentally, which will be described briefly at the end of this paper.

CECAEDA consists of four basic components which will be discussed in separate sections below:

1. A culturally universal model of the perception of etiquette and politeness. This includes the role of etiquette in social interactions and the ability to predict how variations in context and etiquette usage will be perceived and interpreted.
2. A model of the process of decision making and directive compliance—that is, of the mechanism by which perception of contextual elements (including etiquette) affect an individual’s willingness to comply.
3. A set of hypotheses about the effects of etiquette on directive compliance—that is, how variations in etiquette perception (as modelled in part 1) impact the decision and behaviour model defined in step 2.
4. A set of hypotheses about the effects of culture-specific factors (such as those proposed by Hofstede) on the perception of etiquette and politeness (from step 1) and, therefore, a resulting hypothesized correlation between cultural factors and compliance behaviours (in steps 2 and 3).

3.0 COMPONENTS OF THE CECAEDA MODEL

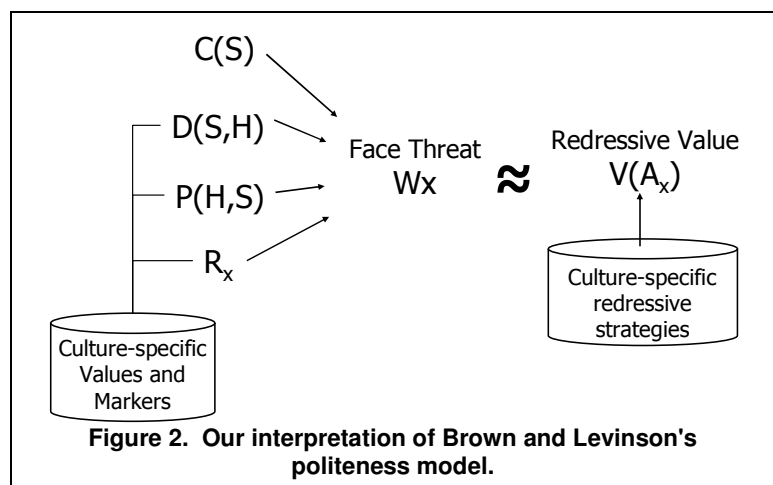
3.1 A Culturally-Universal Model of Social Interaction Etiquette

In order to understand the effects of etiquette on directive compliance—and to understand how both etiquette and compliance might vary across cultures—it is helpful to have a model of etiquette itself and its role in human interactions. We have focused primarily on the work of Brown and Levinson [6] two sociolinguists who extensively studied and developed a universal (although qualitative) model of politeness in human-human interactions. Brown and Levinson collected a large database of instances of politeness in communication across three major cultural/linguistic groups (English, Tamil and Tzetzal) and, from this data, developed a qualitative model which both identified cross-cultural commonalities in politeness behaviours and proposed a culturally universal model of how, when and why politeness is used.

Their explanation for politeness usage stems from the fact that humans are intentional agents with the potential to have their will, intentions, and sense of self-worth or -regard (that is, their “face” [5]) threatened. My simple act of speaking to you, regardless of the content, places a demand on your attention that threatens your ability to autonomously direct it wherever you want. This, then, is the reason for saying “please” in many requests. If I state my desire for something bluntly (e.g., “Give me the salt”) I would be ambiguous about whether I have the power or right to compel you to give it and you might well take offense. “Please” (as for all politeness behaviours) is thus a “redressive” strategy which mitigates the threat. Furthermore, the expectation that such a strategy be used is an example of etiquette that enables interpretations. The etiquette is the “rule” that entitles us to conclude that those who use “please” are striving to be seen as polite; those who do not are not striving to be polite for various reasons (perhaps they don’t believe they need to be, perhaps their notions about politeness are different, perhaps they are just rude).

Our interpretation of Brown and Levinson’s qualitative model (see Figure 2) declares that an interaction between two individuals will be perceived as balanced or “nominally polite” if the face threat in it is balanced by the value of the politeness behaviours (aka “redressive actions”) used. If more politeness is used than there was threat, the interaction will be seen as “over polite”; if less politeness than threat, then the interaction will be seen as “under polite” or rude. Face threat itself, in the Brown and Levinson model, is a function of the observer’s perception of three additional parameters:

- P(H,S) is the *relative power* that the hearer (H) has over the speaker (S). Power is an asymmetric relationship. The higher the power of the hearer, the greater will be the face threat all things being equal, and thus the more redress will be required to balance out that threat. Thus, “give me the salt” might be appropriate for me to use to a low powered individual in our culture, such as a young grade school student, but very inappropriate for me to use to a high-powered individual, such as the CEO of a major corporation or the President of the United States.
- D(S,H) is the *social distance* between S and H. Social distance is roughly the inverse of familiarity and is a symmetric relationship. The greater the social distance, the more redress required. Thus, “give me the salt” might be appropriate to an old friend, but very inappropriate to a complete stranger.



- R is the *ranked imposition* of the raw act itself. Some acts and topics are simply more threatening than others. For example, asking for a loan of \$500 is more threatening than asking for fifty cents. I can ask a complete stranger “Can you tell me the time?” using minimal politeness behaviours, but if I wanted to ask for a larger favour, such as a ride to the airport, I might need to be much more polite: “I’m sorry, sir, but I’m in real trouble, I’d very much appreciate it if you could possibly give me a quick ride to the airport.”

With regard to polite, redressive strategies, Brown and Levinson go on to identify some 40 general types of politeness behaviour that they have observed across multiple cultures in their corpus. A few of these are illustrated in the last example given above:

- *Apology*—“I’m sorry...” Explicitly acknowledges the face threat and shows that I am contrite for it
- *Give deference*—“... sir...” Using an honorific explicitly builds up the face of the Hearer.
- *Give Reasons*—“... but I’m in real trouble...” Accounts for the face threat as stemming from other sources than my explicit intentions
- *Incur Indebtedness*—“... I’d very much appreciate it...” Acknowledges debt incurred by the FTA
- *Be pessimistic*—“...if...possibly...” Minimize face threat by leaving the compliance decision with H
- *Minimize imposition*—“... a quick ride...” Minimize face threat by implying that the magnitude of the imposition is small.

Note that the general dynamics of this model, and the specific concepts and terms that it uses, are intended to be *culturally universal*. That is, all cultures are believed to determine whether an utterance is polite or impolite in context based on whether their perception of the face threat present in the interaction is balanced by the amount of redress. Furthermore, all cultures are also presumed to reckon face threat as a function of power difference, social distance and degree of raw imposition. And finally, all cultures have been observed, in Brown and Levinson’s work, to use redressive behaviours that fall into the categories described above. That said, what counts as a face threat, or what counts as power or social distance, and what counts as a specific instance of a general type of redressive behaviour, as well as the value of all of these parameters, all differ from culture to culture. This is so obvious as to be almost missable in language: thus I say “sir” in English, while I say “saheb” in Pashto—two different sound patterns each of which is an instance of the general category “honorific” (and each of which may have a different weight in their respective cultures). Gestures behave similarly: taking off my hat is a sign of deference in many Western cultures, but would not be recognized as such in Iraq, where taking off one’s sunglasses has roughly the same effect and weight.

We have been developing a quantitative and computational model based on the qualitative model of Brown and Levinson. We have found methods for representing and quantifying the various aspects of the model described above and have developed scales for representing power difference, social distance and raw imposition, as well as methods for identifying and scoring politeness behaviours (both verbal and non-verbal) along with an algorithm for combining them to assess their overall value in context. In addition, we have expanded the overall model in a few ways. For example, we have added a term representing what the observer knows about the “character” of the speaker: C(S). Detailed descriptions of our representation and its application in a variety of settings may be found in [7-9]. We have now completed several partial validation exercises involving this representation and algorithm, and can claim that it shows promising accuracy at least for American cultural interpretations [10].

There are several core benefits to be gained from a computational representation of politeness, especially one like Brown and Levinson’s which is abstracted away from, yet is instantiatable by, culture-specific knowledge. As illustrated in Figure 2, we have now demonstrated the ability for the same core algorithm to both recognize politeness behaviours directed at it in a game-like setting, and to select politeness behaviours

to be used in generating utterances and behaviours directed at others which are in keeping with its overall goals. Representing verbal versus nonverbal politeness behaviours is no challenge for our algorithm if they can first be recognized in the game or simulation setting in which the algorithm operates; they are both simply instances of redressive behaviours and can be scored and combined similarly. The character’s perceptions and reactions are dictated by our politeness algorithm which operates over a culture-specific knowledge base (as illustrated in Figure 2). While the development of such knowledge bases is still a non-trivial amount of work—and the character’s perceptions and reactions will only be as extensive as the knowledge represented therein, we are exploring ways in which our model and its algorithmic implementation streamlines knowledge capture and representation. We have also demonstrated the ability for our core algorithm to be populated with culture-specific knowledge bases containing culture-specific values for power relationships, social distance relationships, imposition scores as well as a culture – specific lexicon of politeness behaviours and their values. Such “cultural modules”, once built (an important caveat, of course), enable us to change the cultural sensitivities (if not the look-and-feel) of a simulated character from, say, that of an Iraqi imam to an American private with the “flick” of a software switch. Since our algorithm operates identically over different sets of knowledge about these attributes, the character’s sensitivities can be changed with ease.

3.2 A Cognitive Model of Directive Compliance

While the above model of etiquette and politeness explains how a given utterance or behaviour (e.g., a directive) is perceived as polite or rude in a cultural context, there remains a gap between that and a decision and action to comply with it. In order to explore the effect of etiquette variations on directive compliance, it is helpful to have a model which unifies and traces the effects of these variables. One such model can be adapted from the work of Lee and See [11] and their interpretation of previous work and definitions by Ajzen and Fishbein [12, 13]. While Lee and See are primarily interested in the effects of machine behaviour on human trust, their model includes a variety of dimensions pertinent to such decisions, including (indirectly) etiquette, and therefore, provides a reasonable starting point for our work.

Figure 3 shows our adaptation of this conceptual model as applied to directive compliance. This model depicts the chain of cognitive and affective responses which results in overt behaviours. Definitions of the steps in this figure are provided below, followed by a more general discussion of the model.

- *Perceptions* are direct observations about the state of the world. In order for a directive to be complied with, it must first be perceived; interpretations come later and are, perhaps, more influenced by culture (though see [3], for evidence that at least some kinds of attention focusing are influenced by culture). For example, if the authority or power level of the agent issuing the directive is important to compliance, the person making the compliance decision will need to perceive cues relevant to assessing that power level—for example, rank insignia and/or titles. Perception of directives is a necessary, but far from sufficient condition for compliance to occur. If someone says “Drop and give me 50!”—I must necessarily perceive those words to have any motivation to comply.

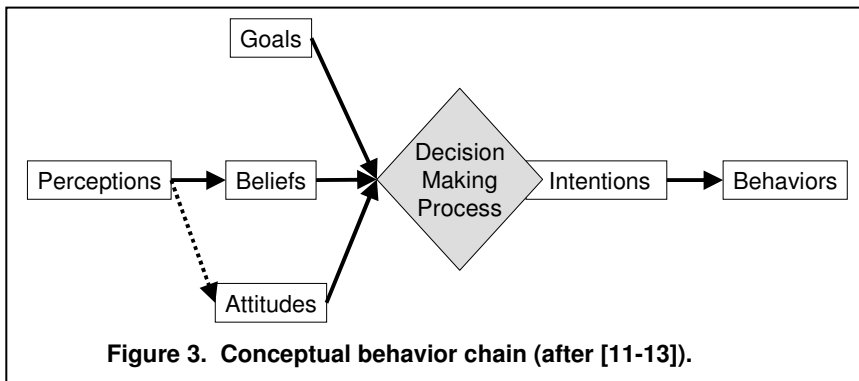


Figure 3. Conceptual behavior chain (after [11-13]).

- *Beliefs* are interpretations about the state of the world based on perceptions and incorporating additional knowledge. For example, for me to understand that the “drop and give me 50!” directive described above is a command to do pushups

requires that I understand English, understand how English commands (vs. requests, advice, etc.) are structured, and that “50” probably refers to pushups. Each of these is a belief formed by adding my cultural (and linguistic) knowledge to the initial perception. Even the interpretation of a perceived event as a directive, much less the degree of force, urgency, imposition, etc. associated with it, are likely to be affected by cultural variations in the interpretation of perceived events.

- *Attitudes* are, in Lee and See’s words “an affective evaluation of beliefs that guides people to adopt a particular intention.” (p. 53). By placing them in parallel to the beliefs, and by having beliefs and attitudes (and goals) feed into a common decision process (represented by the diamond), we intend to emphasize that attitudes exist prior to belief construction in our sense, and that they colour the intentions that result. Thus, for example, if I do not like the person telling me to do push ups, or feel no loyalty to the organization from which their power derives, I may not be inclined to comply with the directive—even though I perceive it, understand and believe it to be directed at me. Attitudes are another primary source of cultural variation in directive compliance. Indeed, many of the variables of interest to Hofstede, Nisbett and others can be viewed as attitudinal. For example, the relative weight that a culture assigns to power differences will affect the attitude with which a member of that culture views the fact that a directive has come from, say, a general vs. a private—though the ability to perceive who *is* a general vs. a private would be a combination of perceptions and beliefs.
- *Goals* are the objectives which an individual has prior to perceiving a directive interaction. Different cultures may well have different general goals, or at least different weightings of similar goals—and, in fact, the tradeoff between the desire to be seen as an acceptable member of the group or society vs. the desire to be self-determined and “self-actualized” (as expressed by [3]) seems precisely to be a variance in the relative valuation of alternate goals. Likely goals that might enter into the decision process to formulate intentions in the pushups example above might include: a goal to preserve my independence, a goal not to offend the instructor, a goal to get to the bank (before it closes), a goal to be physically fit, a goal not to exert myself and cause myself pain.
- *Intentions* are, as might be expected, the intention to perform a behaviour. Intentions are formed by a decision making process represented by the diamond in the above figure. We make no claims at this point as to exactly what form that process takes (i.e., rational choice, recognition-primed decision making, stimulus-response, etc.). In fact, all these processes and more are probably used in various contexts and degrees to form intentions. On the other hand, because a wide variety of factors may intervene, intentions do not always manifest themselves in the intended behaviour. Environmental and human constraints, as well as human error, may prevent an intent from being realized.
- *Behaviours*, in this framework, are overt, observable, volitional and conscious actions (including inaction). For our purposes, the actions associated with complying or not complying with a directive are behaviours. Presumably, given my intention described above, I would exhibit overt behaviours associated with doing pushups—dropping to the floor and starting to exercise. On the other hand, if after doing 5 pushups, I collapse on the floor, my behaviour (very minimal compliance followed by inaction) might not be a sign of lack of intent to comply, but rather of my poor physical condition.

The model in Figure 3 represents the process of perceiving a directive, interpreting it, deciding whether and how to comply with it, and then executing that compliance. It is intended as a single pass through what is, normally, an ongoing and iterative process.

This model necessarily contains many simplifications. For example, feedback loops are not shown for simplicity’s sake, though clearly some feedback exists and is highly relevant. Furthermore, the notion that perception and belief interpretation are distinct from attitudes or goals has been frequently shown to be overstated (e.g., [14, 15]). In practice, our attitudes and goals cause us to be more attuned to, and to more

readily perceive or interpret, data in accordance with our expectations than data which is not in accordance. Furthermore, intention and behaviour will undoubtedly affect subsequent directive events (and, therefore, subsequent beliefs, attitudes and even goals). If I respond positively to a directive, I may be praised or rewarded, causing an improvement in attitude toward the directive giver, in turn causing a greater likelihood both of noticing that person’s needs in the future and of getting future directives from him/her. While the simplifications we have made in the model are known distortions of reality, we suspect that most of the effects we have simplified out will tend to amplify effects that are included—as in the example just provided.

We are using the model described to develop a research environment within which to test directive compliance variations which stem from etiquette and cultural factors. We can categorize the various aspects of a directive event, the Hearer’s perception and reasoning about it, and the compliance behaviours that do or do not result from it, according to the various steps in the model. Further, we can identify factors which can be manipulated or selected for (as independent variables) or observed or inferred (as dependent variables) in accordance with each step. Potential variables are identified for the perception and attitude steps of the decision making model are provided in Figure 4.

3.3 Hypothesized Effects of Etiquette on Directive Compliance

Etiquette may affect the directive compliance process at many points. The etiquette with which a directive is delivered must be perceived and interpreted via existing beliefs in the first place, though it may well alter perceptions and beliefs pertinent to the decision itself. For example, if I speak loudly and quickly to you, and if you perceive those cues and believe them to signal urgency on my part, you may be inclined to respond to my request more quickly—and/or you may decide adjust your attitude toward me and my future directives. Etiquette even constrains the range of available response behaviours and their interpretations.

Brown and Levinson say that when an observer hears politeness near what was expected given prior beliefs, then there is no need to re-examine assumptions and all proceeds nominally. When substantially more or less redress is used, however, then re-examination of assumptions is warranted and may provoke changes in behaviour and interpretation beyond what is explicitly conveyed in the semantic content of the directive. For example, if you use less politeness in asking me to prepare a report than I expect given what I understand

about you, me, our relationship and the degree of imposition of the report, I may assume that you feel you have (or want to claim) more power over me than I thought you did, that you think we are (or you would like us to be) more friendly than I thought we were, that you don’t view this as as large an imposition as I did, or simply that you are less sensitive to my feelings than I thought. Which of these I conclude may well depend on the specific wording you chose. What I do about it will depend on my

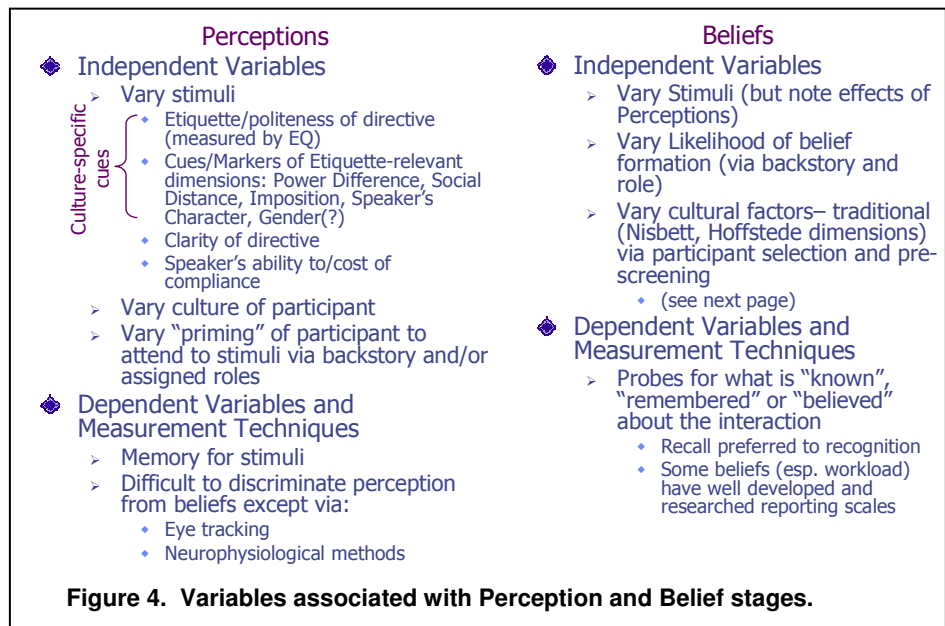
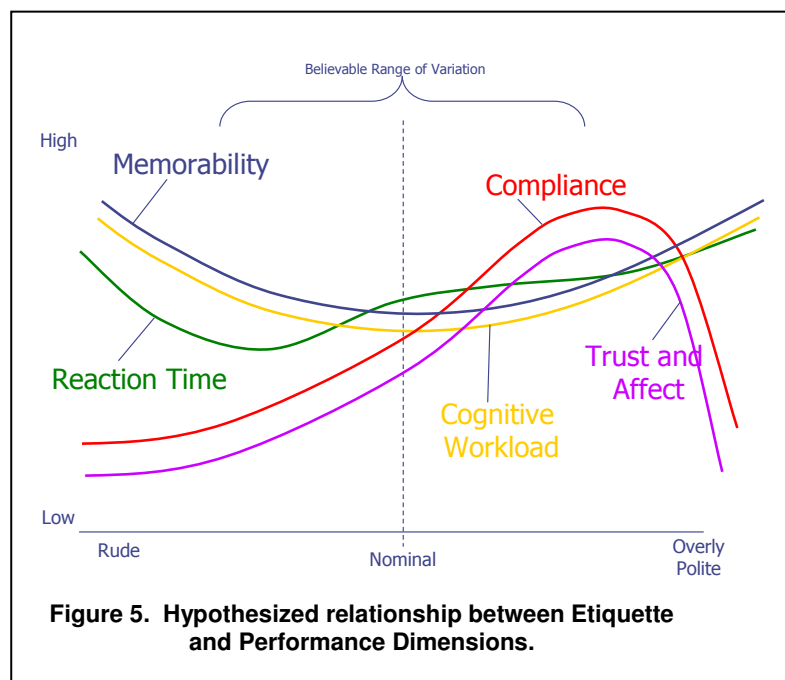


Figure 4. Variables associated with Perception and Belief stages.

interpretation, plus my goals and available behaviours: do I accord you more power and obey (perhaps more quickly) or resist your power by delaying or answering rudely?

We speculate that in general, redressive utterances with large deviations from the expected redress will have detrimental effects on performance. When such behaviour provokes an “unbelievable” response, the resulting cognitive dissonance may increase workload and interrupt ongoing tasks, thus harming all other performance metrics. However, such occurrences are generally infrequent, whereas small deviations from expectations occur frequently and provoke reinterpretations and changes in behaviour—as outlined above. The figure below describes our hypotheses about how slight deviations of redress will affect performance dimensions. Note that in all cases, as the curves in Figure 5 tend toward the extremes, (that is, they tend out of the “unexpected but believable” range and into the “unbelievable”), the associated parameters also tend toward the high or low extremes of their scales. Note also that in all cases we are referring to the *perceived* etiquette of an Observer whose cultural background will certainly inform these interpretations (as discussed in the next section), but we are attempting (as Brown and Levinson) to abstract away from any specific culture and instead to describe universal phenomenon of reactions *given culturally-specific initial interpretations*.

- We hypothesize that slightly polite behaviour will tend to increase compliance whereas slightly rude behaviour will tend to decrease it. In part, the presumed increase in compliance is driven by a likely increase in trust and an increase in positive affect that comes with expected, pleasing and/or adequately polite interactions. Relevant results for this claim are summarized by [11] and some specific experimental data are provided in [16] with regards to trust and affect, and by [17] with regards to pleasure and affect and [18] with regards to the relationship between flattery and affect. Thus, the curves for trust and affect are unified in Figure 5 and both parallel the curve for compliance.
- For subjective cognitive workload (as well as, perhaps, for objective cognitive workload), we hypothesize that either slightly rude or slightly overly polite behaviour will cause cognitive dissonance and, therefore, additional workload. When the amount of etiquette used is less than what is predicted or expected, the hearer may spend more resources trying to decipher any possible “hidden messages” such as urgency or an attempt of the speaker to adjust perceived power, social distance, or imposition of the task. The same is true for an overly polite request. In addition, overly polite strategies generally include more verbiage such as “please”, or indirect language such as “it would be great if someone could...”, both of which may require additional processing on the part of the hearer.
- We hypothesize that a small degree of “rudeness” may result in shorter reaction times, because such an utterance suggests urgency (precisely because it implies less redress for Imposition than was expected). One interpretation for why an otherwise polite speaker might use less redress than expected (as suggested by our politeness model) is if the situation isn’t, in fact, as imposing as at first perceived—perhaps because it is accomplishing something urgent or in the Hearer’s best interest). However, this phenomenon is



probably highly sensitive and, as more rudeness is used, reaction time improvements evaporate and become net reaction time increases as the Hearer spends more time trying to understand why the Speaker is using such unexpected levels of rudeness. By contrast, we believe that overly polite behaviour will increase the hearer’s reaction time both because the H will have additional verbiage or gestures to process, and because unexpected behaviours in general require more processing.

- “Memorability” in Figure 5 is refers to memory for the interactions—including the social and world context in which they occur. We hypothesize that whenever unexpected levels of redress are used, H will attempt to compensate for the difference by reevaluating initial assumptions. This additional attention to and processing of situation information is expected to produce better awareness of and memory for that information. By contrast, a nominal level of politeness provokes no such reinterpretation and, thus, does not receive the memorability benefits. By extension, awareness of aspects of the world referenced in the interaction may also get additional processing and, therefore, better awareness and memory (for example, if I yell at you “Turn out the @\$%#\$ light!” and that is not our normal mode of interaction, chances are good that you will remember me, our relationship and the specific words/redressive behaviors I used, and you may well also have better memory for the state of the light.)

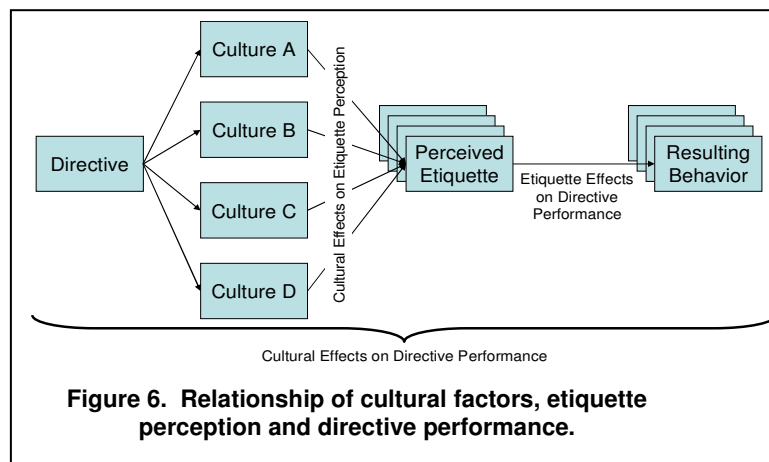
It should be noted that we are not trying to convey mathematical relationships between performance dimensions in Figure 5, e.g. we are not suggesting that the cognitive workload at nominal politeness has the same “performance value” as the compliance parameter at nominal politeness. Rather, each curve is coarsely drawn with regards to its relative high and low values.

3.4 Hypothesized Effects of Cultural Factors on Etiquette and Directive Compliance

As outlined above, we believe that whether a directive is perceived as rude, nominal or overly polite will have detectable affects on the behaviours that Hearers of the directive will exhibit. We will call this link *etiquette effects on directive performance*. Further, we believe (with Brown and Levinson) that these effects are universal across cultures—that is, a directive which is perceived as rude by the Hearer will have the effects described in Figure 5 regardless of the culture of the individuals involved. On the other hand, what a specific individual perceives as rude or polite (and to what degree) will very much be influenced by his or her culture. Hence, there will be *cultural effects on etiquette perception* which will, in turn, produce the etiquette effects on directive performance we have described. Thus, while we can and will speak of *cultural effects on directive performance*, it should be kept in mind that these effects are mediated by etiquette perception. This relationship is depicted in Figure 6. In the section, we offer hypotheses about how Hofstede’s taxonomy of cultural factors (and an individual’s position within them) will affect his or her perception of various etiquette

dimensions in Brown and Levinson’s model and therefore, ultimately, will affect his or her performance. These, then, are our hypothesized cultural effects on directive performance.

Below we describe our hypotheses on how three of Hofstede’s five cultural factors dimensions will affects the perception and weighting of the etiquette of a directive. Since we can project at least the direction of these effects in terms of shifting the perceived level of etiquette appropriateness toward either the rude or the over-polite end of the



spectrum in Figure 5, we can use the hypotheses depicted there to make specific predictions about how the behaviour of members of various cultures will be altered by a given directive utterance.

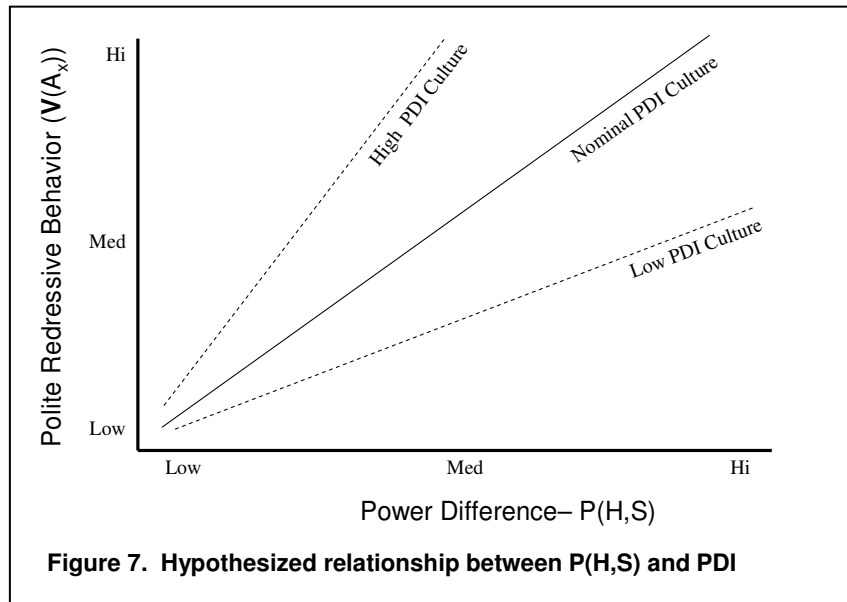
3.4.1 Hypothesis: Power Distance Index (PDI) Enhances Power (P(H,S)) Effects

Factor Description: By Hofstede’s definition, PDI refers to the degree of tolerance that a society has for large differences in power between individuals. “High” PDI cultures or individuals will tend to tolerate large power differences, while “low” PDI individuals will strive to minimize or reduce them. High PDI in a culture means greater power differences and implies a society where such differences matter.

Hypotheses— This implies an enhancing effect on the power term (P) in our etiquette equation—meaning a person from a high PDI culture will regard P as “mattering more” in the calculation of face threat. Recall that the term in our model is, in fact, P(H,S)—the power of the Hearer over the Speaker. This means that powerful Hs from a high PDI culture will expect more deference from low powered Ss, but powerful Ss will feel even less need to offer polite redress to low power Hs. We hypothesize that PDI and weighting or importance for P will be correlated. If P has greater weight in a high PDI culture, then a given amount of redress will not “go as far” in offsetting the P factor in face threat for a high PDI culture—more will be needed. This perceived rudeness will push toward the “rude” end of the behaviours in Figure 5. That is, it will generally (but not inevitably, depending on where in the range we are) provoke reduced compliance, trust and affect, and quicker reaction time, but will increase workload and memorability (if out of the nominal range). The relationship should be similar to that depicted in Figure 7. This yields the following specific hypotheses about the effect of PDI on politeness behaviours and their implications on directive compliance:

Perceptual Hypotheses:

- *PDI-P1:* Small differences in P yield expectations of greater redressive politeness in cultures with high PDI than in those with low PDI,
- *PDI-P2:* A given amount of redressive behavior will be perceived as more indicative of smaller power difference in a high PDI culture than in a low PDI one.



- *PDI-P3:* A given directive from a Speaker of lower P than the H will tend to be regarded as more rude by Hearers from a high PDI culture than a low one.

Behavioral Hypotheses:

- *PDI-B4:* If the increased rudeness perceived by Hearers in a high PDI cultures pushes the utterance into the “slightly rude” region of Figure 5, then we predict decreased compliance, trust and affect and decreased reaction time, increased memorability and increased workload.

3.4.2 Hypothesis: Individualism/Collectivism (IDV) Diminishes Social Distance (D) Effects

Factor Description--High IDV cultures are where individualism is more highly prized and loose relationships are the norm, whereas low IDV cultures place more weight on familial and social relations. Hence, IDV seems to have a diminishing effect on Brown and Levinson's Social Distance term (D); D "matters less" in the calculation of face threat.

Hypotheses--We hypothesize that valuing of individualism (high IDV) translates to a diminished attention to values of social distance (D)—that is, less sensitivity to D in the assessment and management of face threat. Conversely, in low IDV societies, there may be an increased motivation to attend to D. Reducing the importance or weight of D in an interaction means a net reduction in the resulting face threat value. If the threat is perceived to be lower, then less redress will be needed to offset it or, alternatively, a given amount of redress will "go further" in matching the D factor in a face threat for a high IDV individual—less will be needed. This relationship is identical to that depicted in Figure 7 with Social Distance (D) substituted for Power on the x-axis. This, in turn, means that directives will seem less rude when coming from a high D (that is, unfamiliar) individual in a high IDV culture than in a low IDV one. Finally, less perceived rudeness will allow a given utterance to be perceived as more polite—that is, pushed toward the "polite" end of the behaviors in Figure 5. Thus, it will generally (but not inevitably, depending on where in the range we fall) provoke increased compliance, trust and affect, and slower reaction time, but will decrease workload and memorability (if moving into the nominal range). Our specific hypotheses include:

Perceptual Hypotheses:

- *IDV-P1*: Small differences in D yield expectations of greater redressive politeness in cultures with low IDV than in those with high IDV,
- *IDV-P2*: A given amount of redressive behavior will be perceived as indicative of smaller social distance in a low IDV culture than in a high IDV one.
- *IDV-P3*: A given directive will tend to be regarded as more rude by Hearers from a low IDV culture than a high one as long as there is any positive social distance between the interactants, and this effect will be magnified the greater the D.

Behavioral Hypotheses:

- *IDV-B4*: If the increased rudeness perceived by Hearers in a low IDV culture pushes the utterance into the "slightly rude" region of Figure 5, then we predict decreased compliance, trust and affect and decreased reaction time, increased SA and increased workload.

3.4.3 Masculinity/Femininity (MAS): Affects Power (P(H,S)) depending on Speaker Gender?

Factor Description—Cultures and individuals who score high on Hofstede's Masculinity/Femininity factor are those where high value is placed on sex differentiation in roles and relationships and, generally, this translates to more power accorded to males than females. Low MAS cultures are those in which gender makes comparatively little difference in authority or power. While even in high MAS cultures, there may be some specific domains or realms in which females wield more authority, we suspect that the vehicle management task embodied in our testbed is unlikely to be such a realm.

Hypotheses—We hypothesize that the higher the MAS index of an Observer, the more power (P) will be afforded to a male Speaker by default, and the less to a female Speaker. Individuals from low MAS cultures will show less differentiation based on the gender of the Speaker. Since Face Threat is dependent on the P that the Hearer has over the Speaker, and since the power of male Speakers will generally be perceived as higher in high MAS cultures, the relative power that the Hearer has over the Speaker (P(H,S)) will tend to be less for

a male speaker than a female one in a high MAS culture. By contrast, female Speakers will generally be seen as having less power than male ones in a high MAS culture. In short, being given the same directive by a female vs. a male Speaker will enhance the P(H,S) factor and, thus, increase the face threat. Note that this general effect should exist regardless of the sex of the Hearer/Observer—though it might be more powerful for female Hearers (who, in a high MAS culture, might tend to have less P to begin with) than for male ones.

Since overall Face Threat is lower for male Speakers and higher for female ones, a given amount of redress will go further in offsetting the threat from a male speaker than from a female one—a male who says “please” will be regarded as more polite than a female who does so. The reverse will also be true: failure to use adequate redress will be seen as more rude for females than for males. Reduced rudeness (for male Speakers) will push toward the “polite” end of the behaviours in Figure 5. That is, it will generally (but not inevitably, depending on where in the range we fall) provoke increased compliance, trust and affect, and slower reaction time, but will decrease workload and memorability (if moving into the nominal range). Increased rudeness (for female Speakers) will push toward the “rude” end of the spectrum in Figure 5, generally resulting in decreased compliance, trust and affect, faster reaction times, increased workload and memorability.

Perceptual Hypotheses:

- *MAS-P1*: When a Speaker is known to be female, a high MAS participant will expect her to use more redressive politeness than a male Speaker if P, D,R and C levels are held constant. This will be less true for lower MAS participants,
- *MAS-P2*: When the gender of S is unknown, utterances which use less redress will be more likely to be attributed to male Ss than female Ss in direct correlation with the MAS score of the participant.
- *MAS-P3*: A given directive will tend to be seen as more rude if coming from a female S, than from a male. The opposite will be true for male Ss. This effect will vary directly with the MAS score.
- *MAS-P4*: Gender differences in Hearer/Observer responses may show that females from high MAS cultures show the above three effects more powerfully than males do.

Behavioural Hypotheses:

- *MAS-B5*: If the increased rudeness perceived by Hearers from a female Speaker in a high MAS culture pushes the utterance into the “slightly rude” region of Figure 5, then we predict decreased compliance, trust and affect and decreased reaction time, increased SA and increased workload. If the increased politeness perceived for male Speakers pushes the utterance into the “slightly over-polite” region, then the opposite effects will be observed.

4. SUMMARY AND FUTURE WORK

We have defined and implemented a testbed for conducting research to evaluate the hypotheses and models described above. The testbed, illustrated in Figure 8, implements a vehicle monitoring task in a notional national park fire fighting scenario. The participant plays the role of a dispatch officer who receives requests for information from field operators via a chat channel and provides that information in response. In this testbed, we can manipulate the level of politeness with which requests are delivered, as well as “who” they come from. Via a combination of an initial scenario description and the use of naming conventions and iconography to represent the various directive givers, we can control their power levels, social distance and gender. For example, for an experiment examining the effects of power levels, we have developed a scenario in which directive givers come from various levels within the park service organizational hierarchy—some having more, some less and some the same level of power as the participant. This organization structure is reinforced by icons representing each directive giver and which contain a number of stars corresponding to

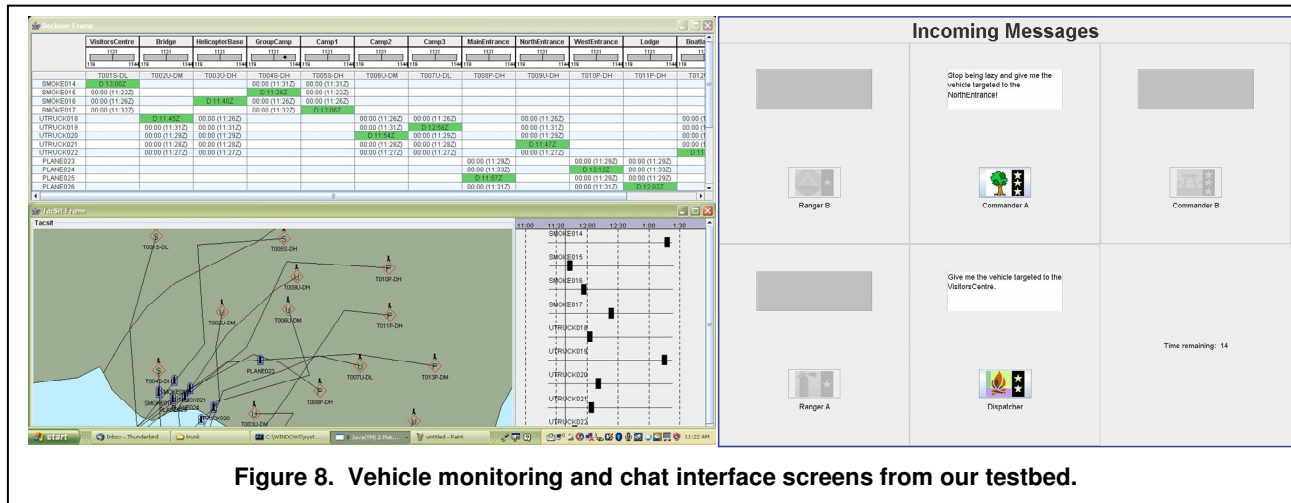


Figure 8. Vehicle monitoring and chat interface screens from our testbed.

that person’s level in the hierarchy. Similarly, we are manipulating icons and scenario details which convey social distance (via membership in the same organization as the participant, a related one or a different one altogether) and gender of directive givers in other experiments.

While not an optimal test of members of different cultures, participants will be selected primarily from a university community for ease of access. All will speak English, and the test will be conducted in English, but we will emphasize the selection of international students with relatively short time spent in the U.S. Pre-test questionnaires will make use of both Hofstede’s Values Survey Module (VSM94)¹ and Dorfman and Howell’s Cultural Dimensions Survey [19] to assess participant’s scores on the relevant PDI, IDV and MAS dimensions. These scores will then be used in correlation analyses with dependent variables collected from interaction with the testbed itself. Reaction time and accuracy will be assessed in provided responses to the directives themselves. Since we expect most instances where a single directive request appears at a time to yield a response in this experiment, we will also provide instances where two directives appear simultaneously (i.e., two field operators have made simultaneous requests) to provide a “forced choice” condition for participants—and to provide compliance data for our analyses. Trust, affect, subjective workload and memory will be assessed by post-test questionnaires.

While this work will only begin to examine the complex relationships between the etiquette of directives, human performance in response to directives and cultural factors which colour both, we have already provided a rich conceptual framework for structuring such work. Our results will represent a step forward toward developing better understanding and, ultimately, predictive models of such relationships and, furthermore, will do so via directly observable aspects of great relevance to military work domains—variations in directives, directive givers and resulting directive compliance behaviour.

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¹ VSM94 is available online at <http://feweb.uvt.nl/center/hofstede/VSM.htm>

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6. REFERENCES

- [1] Hofstede, G. (2001). *Culture's consequences* (2nd ed.). London: Sage Publications.
- [2] Klein, H. A. (2003). The cultural lens model: Understanding cognitive differences and aviation safety. *12th International Symposium on Aviation Psychology*. ISAP, Dayton, OH.
- [3] Nisbett, R.E. (2003). *The geography of thought: How Asians and Westerners think differently...and why*. New York: Free Press.
- [4] Dennet, D. (1989). *The intentional stance*. Cambridge, MA: MIT Press.
- [5] Goffman, Erving. (1967). *Interactional ritual*. Chicago: Aldine.
- [6] Brown, P. & Levinson, S. (1987). *Politeness: some universals in language usage*. Cambridge, UK: Cambridge University Press.
- [7] Miller, C., Chapman, M., Wu, P. & Johnson, L. (2005). The "Etiquette Quotient": An approach to believable social interaction behaviors. In *Proceedings of the 14th Conference on Behavior Representation in Modeling and Simulation (BRIMS)*. 16-19 May 2005; Universal City, CA.
- [8] Miller, C., Wu, P., Funk, H., Wilson, P, and Johnson, L. (2006). A computational approach to etiquette and politeness: Initial test cases. In *Proceedings of the 15th Conference on Behavior Representation in Modeling and Simulation (BRIMS)*. 15-18 May 2006; Baltimore, MD.
- [9] Miller, C., Wu, P., Funk, H., Johnson, L. & Viljalmsjon, H. (2007). A computational approach to etiquette and politeness: An "Etiquette Engine™" for cultural interaction training. In *Proceedings of the 16th Conference on Behavior Representation in Modeling and Simulation (BRIMS)*. 26-29 March 2007; Norfolk, VA.
- [10] Miller, C., Wu, P. & Funk, H. (submitted). "A computational approach to etiquette and politeness: Validation experiments". Invited for publication in a special issue of IEEE Intelligent Systems.
- [11] Lee, J. D. & See, K. A. (2004). Trust in computer technology: Designing for appropriate reliance. *Human Factors*. 46 (1), 50-80.
- [12] Ajzen, I. & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- [13] Fishbein, M. & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.

- [14] Anderson, R.C. & Pritchert, J.C., (1978). Recall of previously unrecalable information following a shift in perspective. *Journal of Verbal Learning and Verbal Behavior*, 17: 1-12.
- [15] Gick, M. L. & Holyoak, K.J. (1983). Schema induction and analogical transfer. *Cognitive Psychology*, 15:1-38.
- [16] Parasuraman, R. & Miller, C. (2004). Trust and etiquette in high-criticality automated systems. *Communications of the ACM*, 47(4), 51-55.
- [17] Norman, D.A. (2004). *Emotional design*. New York: Basic Books.
- [18] Cialdini, R. (1993). *Influence: Science and practice* (3rd ed.). New York: Harper-Collins.
- [19] Dorfman, P.W. & Howell, J.P. (1988). Dimensions of national culture and effective leadership patterns: Hofstede revisited. *Advances in International Comparative Management*, 3, 127-150.