

Human–Computer Etiquette

Cultural Expectations and the Design Implications
They Place on Computers and Technology



Edited by

Caroline C. Hayes • Christopher A. Miller



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Caroline C. Hayes and Christopher A. Miller
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This book is dedicated to our mentors, students,
co-workers, friends, and especially our family
members: Marlene, Michael, and Andrea.

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HUMAN–COMPUTER ETIQUETTE

Should Computers Be Polite?

CAROLINE C. HAYES AND
CHRISTOPHER A. MILLER

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1st Rule Every action done in company ought to be done with some sign of respect to those that are present.

—George Washington’s Rules of Civility*

Why write a book about human–computer etiquette? Is etiquette a concept that is relevant when dealing with things that are not human—that are not even living beings? Typically, we think of etiquette as the oil that helps relationships run smoothly and soothes human feelings. The use or absence of etiquette impacts how participants feel about the interaction, their likelihood of complying with requests, and the quality of the long-term relationship between participants. However, computers do not have feelings and do not “feel” their impact on others. Computers have not traditionally concerned themselves with relationships, therefore why should etiquette be meaningful in interactions with computers? Clearly it is because the *users* of computers have feelings; and etiquette, even coming from a computer, impacts how users trust, accept, and interact with even a mechanical device.

* Washington, George (2003) *George Washington’s Rules of Civility*, fourth revised Collector’s Classic edition, Goose Creek Productions, Virginia Beach, VA.

One might say that etiquette forms a critical portion of the “rules of engagement” for social interactions between autonomous parties in any rich, and therefore ambiguous, setting.

We argue that etiquette is not only *relevant* for understanding interactions between people and computers, it is *essential* if we are to design computer assistants that can work effectively and productively with people (Miller, 2000; 2004). Regardless of whether computers are designed to exhibit etiquette, human users may interpret their behavior as polite or rude. However, we first need to understand more about what etiquette is in human interactions, and what is its function. How do we view computers? And what is their role in our society?

1.1 Etiquette: Definition and Role

Etiquette is typically thought of as a set of socially understood conventions that facilitate smooth and effective interactions between *people*. Interactions may involve spoken, written, or nonverbal communications. They include far more than words; meaning comes from a combination of many channels such as tone or voice, facial expressions, body language, and actions such as holding a door or offering the correct tool before it is requested. Brown and Levinson (1987) state that “politeness, like formal diplomatic protocol . . . makes possible communication between potentially aggressive parties.” Politeness is essential in establishing and building relationships and trust, turning potentially aggressive parties into cooperative parties. It helps people to live and work effectively together, and to coordinate their actions as members of a productive group in their daily lives. In summary, etiquette underlies “the foundations of human social life and interactions.”

Etiquette is not always about being pleasant, it is about being *appropriate*—behaving in a way that others will understand and perceive to be correct in context. Insufficient politeness or inappropriate interruptions are viewed as rude. However, being overly polite may be viewed as obsequious and therefore irritating, and failing to interrupt in an emergency (“Fire!”) can be downright dangerous. Etiquette can be used to help one to be seen as “nice” or “polite,” but it may also be used to communicate emotions that are less pleasant such as dissatisfaction, uncertainty, urgency, and prohibition.

Likewise, we define *human-computer etiquette* as a similar set of conventions that facilitate smooth and effective interactions between people and computers. For computers to be successful in etiquette, they must produce nuanced responses that are sensitive to the context and reactions of people. The reasons that computers need to be appropriately polite are very pragmatic; like people, computer agents need to exhibit appropriate etiquette if they are to be accepted as part of a working team, gain trust from their human collaborators, and enhance rather than disrupt work and productivity. For example, if a computer assistant interrupts an airline pilot during landing, the consequences could be disastrous. Even in a less life-critical task such as word processing, if a computer assistant interrupts at an inappropriate time, the person interrupted will likely feel irritation, their concentration may be disrupted, and their productivity reduced. If computer assistants are to be viewed as valuable team members rather than “bad dance partners,” they must be designed to follow the rules of good team players.

Two of the major etiquette challenges are that (1) many of the conventions of etiquette are implicit, and (2) etiquette is highly dependant on culture and context. These are equally true for people attempting to behave appropriately in social situations, and for software designers who endeavor to build software that behaves appropriately. There are some etiquette conventions that may be stated explicitly, for example in *George Washington’s Rules of Civility*, Emily Post’s *Etiquette*, or *Miss Manners’ Guide to Excruciatingly Correct Behavior* (Washington, 4th ed., 2003; Post, 17th ed., 2004; Martin, 2004).^{*} However, etiquette is more often implicitly and unconsciously understood and applied. People learn etiquette conventions over a lifetime, often without consciously realizing they are learning specific social interactions. Etiquette goes far beyond these explicit sets of rules and protocols. This can make it challenging for people attempting to learn the conventions of other cultures, or for software designers attempting to build those conventions into explicit computer systems.

^{*} Each of these are American etiquette guides from the 18th, 20th, and 21st centuries. The first is derived from an earlier 16th century French etiquette guide, *Bien-séance de la Conversation entre les Hommes* (*Good Manners in Conversation with Men*).

1.2 Etiquette Is Situated in Culture, Time, Place, and Context

Etiquette is both a reflection and expression of culture. Culture changes with geographic location, and over time; it is not static. The following “rules” from “George Washington’s Rules of Civility,” written by Washington when he was a boy in the 1700s, illustrate both how American culture has changed over time, and how much of our current etiquette is implicit.

26th Rule: “In pulling off your hat to persons of distinction, such as noblemen, justices, churchmen & etc., make a reverence; bowing more or less according to the custom of the better bred and quality of persons. ...”

27th Rule: “Tis ill manners to bid one more eminent than yourself to be covered [e.g., to put your hat back on] as well as not to do it to whom it’s due. Likewise, he that makes too much haste to put on his hat does not well, yet he ought to put it on at the first or second time of being asked.”

To a current day American, these rules appear not only irrelevant, but exhausting. How could one possibly keep track of when to bow, who should take off their hat for whom, and precisely how long one should keep it off? These rules appear irrelevant because American culture no longer places as strong an emphasis on social status or acknowledging its associated rituals.

100th Rule: “Cleanse not your teeth with the tablecloth, napkin, fork or knife ...”

The 100th rule appears laughable now because no one would ever think to write it down as it is implicitly understood in American culture that this is simply not done. One would probably not find the equivalent of this rule in etiquette guides such as those by Emily Post or Miss Manners. However, it is exactly this type of culturally implicit convention that makes it difficult for people to know how to behave in other cultures, or for programmers to know how to instruct a computer in what to do. Issues of culture and etiquette will be explored in more depth in Chapters 2 through 6.

1.3 Computers: Machines or Hybrid Beings?

Not only do people expect computers to follow many of the rules of social interaction, but the reverse is also true; they frequently treat computers as if they were social beings, despite being fully aware that they are not (Figure 1.1). For example, people poured their hearts out to ELIZA, the computer program that mimicked a Rogerian psychiatrist, even when they knew it was a machine (Weizenbaum, 1966). Nass found that people respond to computers in much the same ways as they respond to people, along many dimensions (Nass et al., 1994). For example, people tend to discount it when people praise themselves, “I am the world’s expert on rainforests,” but take it more seriously when other people praise them, “She really is the world’s expert on rainforests.” Nass performed an experiment in which he asked subjects to listen to computer voices “praising” a computer tutor, then fill out evaluations of the tutor’s competence. Their evaluations showed that people tended to discount statements of praise that came from the same workstation that was also running the tutor, but they took the praise more seriously if it came from a different computer. Thus, it appeared that they treated praise from a computer in much the same way as they would treat praise from a person.

Nass also found that people have social responses to computers regardless of whether they have human-like features or not (Nass et al., 1994). However, adding human-like features may enhance their tendency to anthropomorphize. For example when computers are



Figure 1.1 People often respond to computers in much the same way as they would to other people. (Courtesy of Kolja Kuehnlenz © 2009 Inst. of Automatic Control Engineering (LSR), TU Munich).

given human voices, faces, or forms, people tend to apply the same gender and race stereotypes to the computer as they would to a person of that gender or race (Nass et al., 1997; Moreno et al., 2002; Gong, 2008). Thus, it appears that people have socially-based expectations of how computers should behave, whether they are conscious of these expectations or not. These observations reflect a long standing, ambiguous relationship between people and computers, and more generally between people and technology. People know that computers are “things” yet they treat them as if they were something more.

The human tendency to treat machines as more than machines is not isolated to computers (in all their various forms, from laptops to robots); people also form attachments and relationships with other types of artifacts, and respond to them in ways that are essentially social. (Indeed, cf. Dennett, 1987) For example, many people talk to their cars, give them names, pat their dashboards encouragingly, and curse at them when they fail. They may form human-like attachments to tools that are an essential part of their work and creative processes. The concert cellist Jacqueline du Pre was depicted in a memoir as treating her cello unkindly when she felt the demands of her musical career were limiting her life; she left the valuable antique cello on the hotel balcony in the snow, and “forgot” it several times in the back of cabs. Then when her life started to look up, she held the cello and apologized to it (du Pre and du Pre, 1997).

While social responses to artifacts of many types may be common, we have a special relationship to computers because they are unique in their ability to autonomously perform complex cognitive work, and to interact with us in tasks requiring knowledge and judgment. In contrast, traditional machines perform physical work, have no knowledge, and exercise no judgment. Perhaps because of this, people respond to computers as if they were a hybrid between machines and sentient beings even while acknowledging that they “don’t really think.” People often attribute logic and intentions to computers which they do not really possess.

We provide several examples to illustrate some situations in which people ascribe human-like intent to computer actions. In the first example, users were asked to evaluate Weasel, a computer assistant used in military battle planning, which automatically generates enemy courses of action (ECOAs). ECOAs represent hypotheses about

possible maneuver plans which enemy forces might follow. The evaluators were shown the relatively small set of rules that Weasel used to construct ECOAs, and the set of ECOAs that it generated for a specific situation (Larson and Hayes, 2005). When asked to explain why Weasel did what it did, evaluators frequently produced complex explanations with many nuances that far exceeded the rules in front of them. "Oh, I see. It (Weasel) is worried about a lateral attack, so it placed these units here to defend this area." Weasel was, in fact, doing nothing of the sort! While the evaluator understood that the COAs were generated by a computer, had read the rules, and had acknowledged the experimenter's explanation that these rules and only these rules were used, he still attributed a more nuanced, human-like logic to the computer. The tendency to attribute human-like powers to computers can be very pronounced.

In the second example, a computer tutor, Adele, monitored medical students as they worked through simulated medical cases (Johnson, 2003). If the student made a mistake, Adele would interrupt and provide feedback about the mistake. If this happened once, the student did not necessarily object, but if it happened multiple times and Adele interrupted and criticized them in the same fashion each time, students came away with the impression that Adele had a "very stern personality and had low regard for the student's work." Adele certainly made no value judgments on the students, and this impression of hostility and rudeness was not intended by Adele's designers.

In the first example, ascribing more detailed and subtle reasoning to the computer than it actually possesses may lead the user to place unwarranted trust in the computer's solutions, also known as overreliance (Parasuraman and Riley, 1997). On the battlefield, this could be life-threatening. In the second example, interpreting the computer tutor as hostile or rude may lead students to disengage from the tutor's lessons, and possibly abandon it altogether; Lewis Johnson's later experiments suggest that students were less motivated and progressed more slowly when their computer tutor was not polite, particularly with difficult problems (Wang et al., 2005).

The point is that a major problem is created by our dual view of computers as chimerical hybrids between machines and intelligent living beings; we consciously design computers as machines, yet we unconsciously respond to them as if they had human-like reasoning

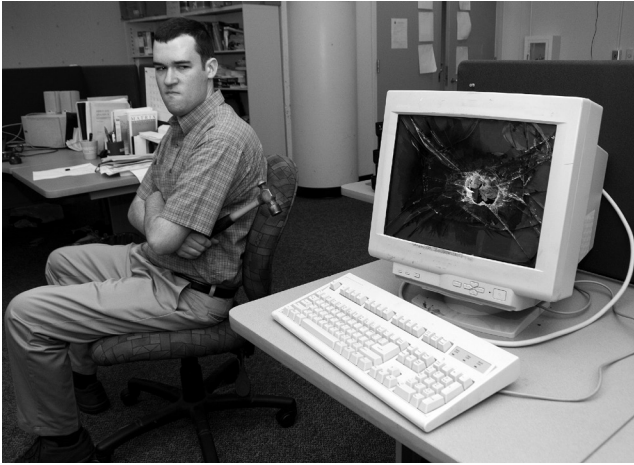


Figure 1.2 Human-Computer Etiquette is a lens through which one may view and explain users' frustrations with computers. (Courtesy of Nancy Johnson).

and intent. When software designers fail to anticipate users' social responses to computers, we may unintentionally violate the rules of engagement for social interaction. Users may become offended, disrupted, angry, or unwilling to use the software (see Figure 1.2). This can lead to reduced performance, errors, and life-threatening situations.

However, it is not necessarily a bad thing to attribute human-like motivations to a machine. It can be very beneficial, as the next example illustrates. When the co-author was soliciting inputs for a project on adaptive information displays for fighter cockpits, an aviator related that every day, when he climbed into the cockpit he asked his aircraft: "How are you going to try to kill me today?" While the aircraft was certainly not designed to kill its own pilot, it was advantageous to the aviator to adopt a mildly antagonistic attitude towards his aircraft, and cast it in the role of an adversary. This helped him to "stay sharp" and anticipate problems while he carried out his work. Specific social relationships with technology can be advantageous and effective—and those relationships need not always be polite or pleasant ones.

1.4 Designing for Appropriate Human-Computer Etiquette

It is becoming more necessary to design computers capable of using appropriate etiquette, especially as computers become capable of increasingly complex cognitive work, in an ever expanding array of roles.

Service-bots (robots that act as personal assistants to people), computer tutors, health coaches, and computer-generated video game characters are all becoming common in our daily lives. Intelligent decision-aiding systems are being used to assist professionals ranging from fighter pilots and nuclear power plant operators, to financial speculators.

But how can one design computers to use etiquette appropriately and effectively? This is relatively uncharted territory. The implicit, contextual, and culturally embedded nature of etiquette makes it challenging for people, let alone computers. The goal of this book is to begin exploration of some of this uncharted territory, and to start sketching in some of its outlines. Some of the questions to be explored include:

- What is human-computer etiquette? What range of behaviors does it entail?
- Are etiquette expectations for computers the same as they are for people?
- Are these expectations modified by the humanness of the computer or robot? For example, do users expect that computers using human voices, faces, or forms to exhibit more human-like interactions?
- How can human-computer etiquette, once designed, be implemented?
- How can we enable computers to gauge the reactions of people, and adjust their behavior accordingly?
- What impact do polite agents have on human emotional response, trust, task performance, user compliance, and willingness to accept a computer application or agent?
- Does the politeness of an application have the potential to influence how we behave online?

The first question, “What is human-computer etiquette?” has many answers. The chapters in this book define etiquette in numerous ways:

- “The culturally embedded expectations for social interactions” (Klein, Chapter 2)
- “Accepted behaviors for a particular type of interaction in a particular group context” (Kaber, Chapter 10)
- “Support (for) social acts that give synergy” which enhance society (Whitworth, Chapter 13)

1.5 Is Human-Computer Etiquette Anything New?

The wide range of definitions and broad set of viewpoints found in the chapters appropriately reflect the complex, rich, and varied nature of the phenomena surrounding human-computer etiquette, and are hence far more useful than a single and precise definition could ever be.

Related to the question “What is human-computer etiquette?” is a subsequent one: “How is human-computer etiquette different from human-computer interaction, social computing, emotional computing, or any number of other research fields and design approaches?” Human-computer etiquette is not distinct from these topics and shares many goals; however, their foci differ. For example, social computing aims to enable and facilitate social interactions between people through or with computers, while human-computer etiquette aims to understand how computers trigger etiquette-based social responses, so that software can be designed to achieve effective interactions.

Human-computer etiquette serves as a lens to view and explain human reactions to computers. It highlights and focuses us on certain aspects of the computer, its role, and the framework of cues and interpretations in a culture, context, or work setting that the computer inevitably enters into. The power of this lens arises from the insight that people respond to computers as if they were hybrids between machines and social beings, even when they insist that they view them as nothing more than mechanical. This lens changes our view of both computers and people, and how to design for them. When viewed through the lens of human-computer etiquette, there is no longer so sharp a distinction between interactions between people and computers, and interactions among people. This view makes clear why software designers can no longer afford to concentrate only on “mechanical” algorithms and logic, but must also consider the social aspects of their software, including whether it will be perceived as kind, trustworthy, rude, or clueless.

The perspectives represented in these chapters provide a framework in which to explore the remaining questions. For software developers, this framework offers another approach with which to improve the users’ experiences with, and emotional reactions to, their products. In the current economic climate of intense global competition, product developers are acutely aware that to be competitive, products must not



Figure 1.3 Use of computing and technology in other cultures: female member of Mursi tribe in Ethiopia with rifle and iPod. (Courtesy of iLounge.com).

only function on a technical level, but must also be easy, effective, *and enjoyable* to use. Additionally, we hope these perspectives will provide approaches to inform design of software tools for customers in emerging markets outside Europe and the U.S. where customers may have very different cultural expectations (see Figure 1.3, and Chapter 6). An explicit understanding of human-computer etiquette may allow software designers to better support people's preferred way of working and living in any culture. Finally, by deepening our understanding of the relationships between humans and computers, we may also come to understand more about human relationships.

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PART I

ETIQUETTE AND
MULTICULTURAL
COLLISIONS



2

AS HUMAN–COMPUTER INTERACTIONS GO GLOBAL

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We have become accustomed to interacting with computers. They give us daily weather forecasts and help us keep in touch with friends and family globally. They deliver references, digital articles, and newspapers and allow virtual teams to work together from opposite sides of the globe. Computers even provide embodied agents to guide us through difficult procedures or teach us to speak Japanese. They allow us to shop for products in distant countries and have ready access to cash on city streets almost everywhere. Human–computer interactions are a part of our lives, mediating communication, providing instruction and support, and serving as gateways for business transactions.

As computer technology spreads around the world, it can act to broaden perspectives as different cultural patterns expand creative options and knowledge while cultivating international understanding and supporting economic, intellectual, and political development. Computer technology introduced to a new nation or region, however, can act as a Trojan horse when the technology conflicts with etiquette, the culturally embedded expectations for social interactions in this nation. Technology may introduce culturally inappropriate interfaces that distort meaning or reduce acceptance. When computers cross national borders, systems designed to support human-computer interactions in one culture may prove to be incompatible with the representations, social expectations, and cognition of other cultures (Shen, Woolley, and Prior 2006). Cultural incompatibility, often invisible, may lead to error, frustration, confusion, conflict, and anger. The rapid expansion of globalization and the unobtrusive nature of important cultural differences have highlighted the need to understand the impact of culture on the way people use computers.

In this chapter, we explore the role of culture in human-computer interactions with the goal of helping international communities take advantage of these powerful tools. Our analysis starts with a description of the Cultural Lens Model as a framework for understanding the ways in which culture shapes how we view and respond to the world. Next, we describe aspects of culture that can affect human-computer interactions. We then look at three domains of computer use: computer-based communication, computers in commerce, and intelligent agent interactions. These illustrate how culture may affect human-computer interactions. Finally, we discuss implications of our analysis and directions for future work.

2.1 How Do Cultures Differ?

While the notion of “culture” can evoke visible expressions such as language, food, and music, culture extends far deeper to embedded social differences in the ways we interact with each other; the values that direct our choices, actions, and plans; and the differences in how we reason, make decisions, and think (Nisbett 2003). Infants around the world start life with virtually identical potentials and tendencies. Distinctive cultural patterns emerge because children typically grow up

in a distinct setting where patterns of language, behavior, and thought are shared. During their early years, children learn how to direct their attention, interpret their world, and follow the social rules and roles of their culture. They also adopt ways of making sense of the world, evaluating evidence, and justifying conclusions. The mechanisms of cultural transmission and maintenance are elaborated elsewhere (Berry 1986).

Cultural experiences early in life shape our perception and thoughts. In this respect, culture acts as a multidimensional lens that filters incoming information about the world to provide a consistent view (Klein, Pongonis, and Klein 2000). The *cultural lens* (Klein 2004) includes dimensions suggested by earlier researchers (Hofstede 1980; Kluckhohn and Strodtbeck 1961; Markus and Kitayama 1991; Nisbett 2003). While these dimensions cannot capture the full richness and complexity of cultural groups, they help explain and anticipate the influence of culture in social, professional, and commercial contexts. When people encounter new experiences, these experiences are interpreted through the lens shaped by their early cultural immersion. When people create new objects and systems, cultural dimensions affect how they design these artifacts. While it is possible for new experiences to modify and enhance a person's cultural lens, this takes effort and is not uniformly successful.

Cultural immersion can be both good and troublesome. The good part is that we have a whole set of behavioral scripts, social norms, and cognitive frames that help us function in our environment. We do not have to pay constant attention to acting appropriately. We share a respect for social conventions that allows us to understand, anticipate, and modulate the actions of others within our culture. Our interactions are facilitated by shared social conventions ranging from the etiquette of interpersonal interchanges and the use of a common language to complex aspects of organizational and intellectual activity. Human-human interchanges are supported by common perception, parallel social expectations and patterns, compatible cognition and reasoning, and shared social systems.

The bad part of immersion is that deeply ingrained patterns of behavior and thought can cause confusion, conflict, and paralysis when we leave the confines of our own culture and enter the global community. Cultures define favored logical structures, acceptance of uncertainty, and ways of reasoning. Cultures provide structure for the