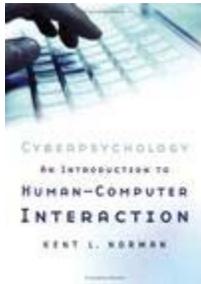


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Cyberpsychology: Emphasizing the Human in Human–Computer Interaction

A Review of

Cyberpsychology: An Introduction to Human–Computer Interaction

by Kent L. Norman

New York: Cambridge University Press, 2008. 448 pp. ISBN 978-0-521-86738-2 (hardcover); ISBN 978-0-521-68702-7 (paperback). \$115.00, hardcover; \$45.00, paperback

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Cyberpsychology is the study of persons in the context of human–technology interaction. As a developing field, cyberpsychology research encompasses a host of psychological phenomena associated with or affected by emerging technologies. As such, it reflects subject matter found in human–computer interaction: computer graphics, operating systems, programming languages, communication theory, graphic and industrial design disciplines, linguistics, social sciences, cognitive psychology, and human performance. While some researchers emphasize the computer in computer–human interaction, a defining characteristic of cyberpsychology is that the human takes precedence over the computer.

Kent Norman in *Cyberpsychology: An Introduction to Human–Computer Interaction* attempts to cover a variety of topics in the psychology of human–computer interaction rather than exhaustively delving into any single topic. Norman emphasizes that this is a cyberpsychology text; as such, it is more about persons than about machines. As a result, the organization and the perspective of the book come from psychology, not from computer science. Hence, although the text is expected to be used in disciplines other than psychology, the emphasis is primarily upon humans and only secondarily on technology.

Cyberpsychology: An Introduction to Human-Computer Interaction is a comprehensive introductory textbook appropriate for undergraduate students. It covers a number of areas that would be of interest to a student new to the study of cognition, including perception, attention, long-term memory, working memory, thinking, and language. Uniquely, within the chapters on human cognitive function, there is also material on computer science that helps to provide a thorough insight into the nature of human–computer interaction. The addition of computer science material to an introductory psychology text is important because computers permeate nearly every human activity in the modern world and affect human behavior from the most basic sensory–motor interactions to the most complex cognitive and social processes.

Also laudable is Norman's use of vignettes at the beginning of each chapter and questions/exercises at the end of each chapter. For example, in the introductory chapter "Importance, Implications, and Historical Perspectives," Norman proffers a vignette that describes an online chat between Mary, Molly, and Martha. After some discussion (using a multichat window) about whether they should study or go to a movie, Mary, Martha, and Molly get up and leave the dorm room where they had been sitting together for the past hour, each at her own computer. Norman points out that in a manner similar to the students in this vignette, persons spend so much time interacting with computers, e-mail, and instant messaging that they may forget that they are communicating with people in the same room.

In a related manner, Norman ends each chapter with exercises to support the material covered in the chapter. For example, at the end of the first chapter, the following recommendation is given: "Keep a journal for one week, listing each encounter that you have with computer technology at home, school, and work" (p. 33). Such exercises provide concrete scenarios from which students can learn by applying the chapter's information.

In Part I (Fundamentals), Norman establishes a foundation for understanding the psychological aspects of human–computer interaction in terms of historical background, biological and technological systems, theoretical models, and empirical methods. Specifically, Norman introduces the reader to a brief history of psychology and computers and an undemanding comparison of the human nervous system with the circuitry of a computer.

Next, in Part II (Systems), the narrative starts with the input/output systems of humans and machines and then moves more deeply into the systems of learning and memory, thinking and problem solving, and language. Norman also presents a number of theories and models of human–computer interaction, as well as research methods and techniques for usability testing. Following the typical contents of an introduction to psychology, the book then discusses sensation and perception, learning and memory, thinking and problem solving, language processing, individual differences, motivation and emotion, social relations, and abnormal behavior as they affect the human–computer interface.

In Part III (Relationships), the author moves into cyberpsychology, describing the ways in which individual differences in abilities and personality interact with the computer, how interpersonal relationships are mediated by the interface, how feelings and emotions enter into a person's relationship with the computer, and how various situations may lead to pathological relationships and require counseling.

Finally, in Part IV (Applications), Norman turns to particular issues of interest affecting cyberpsychology and the human–computer interface. For example, Norman discusses work in artificial intelligence within human–computer interface research. There is also discussion of universal access, assistive technologies, and augmented cognition, which are efforts directed to help users overcome obstacles and achieve new levels of performance. Norman emphasizes that important areas of application for these fields of research are in education, entertainment, and their synthesis, "edutainment." Finally, Norman ends the book with projections into future developments. According to him, cyberpsychology is the new psychology.

While there are a number of notable contributions in Norman's text, greater emphasis could have been placed upon new uses of novel technologies (e.g., virtual and augmented reality) in improving

human–computer interaction in general and human performance in particular. A great deal of work has been done in this area, and researchers are working to emphasize well-developed research designs. Further, there is growing interest in careful physiological monitoring during human–computer interaction to develop intelligent feedback systems. This allows the virtual environment to learn from the human and the human to learn from the environment.

Likewise, Norman’s text could have been aided by discussions of multiple simulation software and virtual/augmented reality systems being developed and researched that may be used to facilitate assessment, training, and therapy. The cyberpsychology world is replete with human–computer interaction projects that use virtual/augmented reality technology. These projects range from various pain distraction tactics to clinically validated anxiety treatments. These projects include, but are not limited to, virtual/augmented reality technology environments for treatment of posttraumatic stress disorder, social phobia, arachnophobia, acrophobia, panic disorder with agoraphobia, aviophobia, claustrophobia, and fear of driving.

Virtual/augmented reality technology is increasingly being recognized as a useful tool for the study, assessment, and rehabilitation of cognitive processes and functional abilities. The ability of virtual/augmented reality technology to create dynamic, immersive, three-dimensional stimulus environments, in which all behavioral responding can be recorded, offers assessment, training, therapy, and rehabilitation options that are not available with traditional methods. In this regard, virtual/augmented reality technology applications are now being developed and tested that focus on component cognitive processes including attention processes, spatial abilities, memory, and executive functions.

Another issue that could have added to the text’s value is the increased ecological validity of cognitive batteries that include assessment using virtual/augmented reality technology scenarios. Such technology may aid differential diagnosis and treatment planning. Human–computer interaction systems have been enhanced by the use of virtual/augmented reality technology, and the requirements for assessment of affective and cognitive states and traits appear well matched to a comprehensive virtual/augmented reality technology approach. Within a head-mounted, display-delivered virtual environment, it is possible to systematically present cognitive tasks targeting neurocognitive performance beyond those that are currently available using traditional methods.

In Summary

Written to cover all levels of ability and including helpful figures and illustrations, this book has sufficient depth to appeal to the most able students while the clear and accessible text, written by an experienced cyberpsychology researcher, will help students who find the material difficult. It will appeal to any student on an undergraduate psychology degree course as well as to medical students and those studying in related clinical professions such as nursing. Although in his discussion of cyberpsychology Norman chose to emphasize the “human” in human–computer interaction, his text might have been improved by increased discussion of the important role virtual/augmented reality scenarios are playing in the developing field of cyberpsychology.