

Human Experience & Interaction Design

Concepts, Methods, and Products

“Viable communication moves in four dimensions: it relates man to man, and that relation determines and is determined by what man can become, by the ideals which inspire him, and by his conception of the objective circumstances which environ him.”

Richard McKeon, “Communication, Truth, and Society”

Syllabus

Graduate Design Seminar I
Design 51-701, MMA II
Fall 2001

Richard Buchanan

Carnegie Mellon
The School of Design

Human Experience and Interaction Design

Concepts, Methods, and Products

Course Description

The term “interaction” is ambiguous in everyday use. It vaguely refers to a dynamic relationship between physical objects or between people or between people and their natural, cultural, and spritual surroundings. In this sense, interaction appears to be nearly useless as a concept, since it merely directs our attention towards phenomena that have been better understood by other concepts in philosophy, the arts and the sciences. However, “interaction” has gradually taken on greater significance in contemporary culture. It has become a fundamental term for exploring connections among the many diverse and often disparate elements of our experience. Today, the nature and quality of interaction lies at the core of many of the problems that we face in all aspects of our lives. The goal of this course is to explore the concept of interaction in human experience, with particular attention to the design of the human-made world. We will seek to understand how and why interaction has become a central concept in the new revolution that is taking place in design thinking and how it has led to a new understanding of products that serve human beings.

Interaction design emerged in contemporary consciousness around problems of the digital medium and the relationship between people and computers. However, interaction design has greater significance than its application to the digital products that increasingly surround us and influence our lives. It is equally important for physical or “analog” products, and it suggest new ways to think about the design of activities, services and processes as well as human systems, organizations and environments. Interaction design offers new insight into visual communication, physical artifacts, activities and services, and the systems and environments within which all products exist. For this reason, interaction design is more than a new branch of professional practice. Interaction offers a new approach to design thinking in general and provides the basis for a fundamental critique of the entire field of design and the place of design in culture.

Through this course, we seek to provide students with a strategic perspective on interaction design in a rapidly changing environment that is too often dominated only by tactical issues. However, this is not a course in design theory. It seeks to balance theory, practice, and production and to encourage innovation and creativity. To this end, we will study many concrete examples of interaction and interaction design in a variety of traditional and new media, exploring different subject matter, materials, forms, and purposes.

Richard Buchanan

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Structure & Content of the Course

Part 1. Searching for Data

We will discuss the difference between the immediate experience of interaction and the selection of data or evidence on which to base further study of interaction. What is “given” to us in immediate experience is the total field or situation of an interaction. What is “taken” is a selection of data or evidence upon which we begin to form an interpretation. We will discuss the variety of data available to us in our first experience of interaction. This is the raw material of interaction, including words, images, gestures, and sounds, as well as sensations, emotions, and thoughts—the full range of “information” that may be found in any interaction.

Part 2. Interpretations

We will explore the different meanings of “interaction” among a variety of authors who have had important influence on our understanding of the concept. We will study literature from a wide variety of fields and explore different interpretations that have given the concept of interaction rich meaning in contemporary life. We will study how other concepts in the arts and sciences are related to interaction and how they deepen its significance.

Part 3. Arts, Methods, & Techniques

We will explore the arts, methods, and techniques of interaction design. The goal is to provide a common framework and language for discussing interaction design in the programs of the School of Design and in the varieties of practice that one encounters in the professional world.

An art is a systematic discipline for thinking, doing, and making. It provides principles and strategic guidance for the use of the many specific methods and techniques that are employed in design. In contrast, methods provide tactical support in addressing design problems. Methods are characterized by a particular intellectual, disciplinary, or scientific framework. They typically bring special knowledge into practical use for the designer. Finally, techniques are individual tools and ways of working to solve technical design problems.

We will focus on two arts that offer powerful insight into the creative work of the interaction designer. Rhetoric emphasizes persuasive communication in a social environment. It explores relationships between the designer and the human user, as these relations are mediated by a product. The creative work of the designer lies in organizing ideas and information into expressive narratives and arguments that bring about changes in the attitudes and behavior of people. Poetics emphasizes the creation of intelligent and emotionally satisfying experiences as artistic expressions. The creative work of the designer lies in integrating words, images, sound, motion, time, and space into well organized forms. These arts offer different perspectives on the creation of effective products that meet human needs in commerce, organizational life, education, art, entertainment, and other areas of daily living.

While focusing on rhetoric and poetics, we will also discuss the perspectives on interaction design afforded by grammar, semiotic, and dialectic.

Part 4. Principles & Values

We will explore the problem of principles and values in interaction design. What are the grounds for judging effective interaction design and what values should guide interaction designers in their work? These are questions that go beyond art and methodology. We will explore the place of interaction and interaction design in personal life, organizational life, social and economic life, and cultural well-being. Our goal is to raise productive questions about the nature of principles and values in a world of diversity and conflict, where pluralism is an objective fact of human experience and where values are essentially contested in practical action.

Enrollment	<p>This is an introductory course, not in the sense that it is elementary but that it has no prerequisites. As an introduction to interaction design, it is the first course for all students in the M.Des. in Communication Planning and Information Design and in the M.Des. in Interaction Design programs. It is also the first course for students in the Ph.D. program in Design. M.Des. students are expected to register concurrently in Graduate Design Studio I.</p> <p>The course is open to other students, including doctoral and master's students in the Human-Computer Interaction Institute, by permission of the instructor.</p>
Relationship to Studio	<p>Students in the course will benefit directly from the coordinated work in Graduate Design Studio I, but registration in that course is not required, except for first-year M.Des. students.</p>
Extra Classes	<p>If there is sufficient student interest, I am willing to conduct extra class sessions to discuss specific supplementary readings.</p>
Grading Criteria	<p>Final grades will be based on two components:</p> <ul style="list-style-type: none"> <li> <p>• Written assignments will count for 1/2 of the final grade</p> <p>Papers will be evaluated for <i>intellectual content</i> (accuracy of representing the ideas discussed by authors, quality of argument, and imagination in developing ideas) and <i>written presentation</i> (grammar, style, and visual appearance of papers). Adjustments will be made for those students whose native language is not English.</p> <li> <p>• Class participation will count for 1/2 of the final grade</p> <p>Participation will be evaluated by <i>readiness for discussion</i> (evidence of having read the assigned materials), <i>response to questions</i> (evidence of attempting to address the question), and <i>effort to contribute to class discussion</i>.</p>
Office Hours	<p>Professor Buchanan's office is located in MM 110. Students may make appointments with the receptionist.</p> <p>E-mail: buchanan+@andrew.cmu.edu Telephone: x8-2828.</p>

Readings

Required texts for the course are marked in the syllabus as “Readings.” Some are available in the books assigned for the course, others will be distributed in class. “Supplementary Readings,” as marked in the syllabus, are recommended but not required. They have long-term value for continued exploration of the themes of the course.

- Students are expected to order the following books on-line. Most of these titles will also be placed on Reserve in the Hunt Library.

Aristotle. **Introduction to Aristotle** (Modern Library Series) by Richard McKeon (Editor). Hardcover, Modern Library.
ISBN: 0679600272

Richard Buchanan and Victor Margolin (eds.). **Discovering Design : Explorations in Design Studies**. Paperback, University of Chicago Press.
ISBN: 0226078159

Seamus Heaney. **Crediting Poetry : The Nobel Lecture**. Hardcover, Farrar Straus & Giroux.
ISBN: 0374131384

David Hyerle, **Visual Tools for Constructing Knowledge**. Paperback, Association for Supervision and Curriculum Construction.
ISBN: 0871202662

Ivan Illich. **In the Vineyard of the Text : A Commentary to Hugh's Didascalicon**. Paperback, University of Chicago Press.
ISBN: 0226372367

Richard A. Lanham. **The Electronic Word : Democracy, Technology, and the Arts**. Paperback, University of Chicago Press.
ISBN: 0226468852

Brenda Laurel. **Computers As Theatre**. Paperback, Addison-Wesley.
ISBN: 0201550601

Victor Margolin and Richard Buchanan (eds.). **The Idea of Design**. Paperback, MIT Press.
ISBN: 0262631660

Geoffrey A. Moore. **Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers**. Paperback, Harperbusiness.
ISBN: 0887307175

Plato. **Phaedrus**. (Hackforth translation). Paperback, Cambridge University Press.
ISBN: 0486277984

Wayne C. Booth, Gregory G. Colomb, Joseph M. Williams. **The Craft of Research : From Planning to Reporting**. Paperback, University of Chicago Press.
ISBN: 0226065847

Kate L. Turabian, John Grossman, Alice Bennett. **A Manual for Writers of Term Papers, Theses, and Dissertations**. Paperback, University of Chicago Press.
ISBN: 0226816273

Other Materials

Films The syllabus suggests a series of films for viewing in association with readings and topics of discussion. We will attempt to schedule showing times for some of these films outside of regular class hours. However, they are not required. If students wish to view these works on their own, some of the films are available (usually in videotape format) from the Office of Instructional Resources and others may be rented from commercial video stores in the area.

William Smock, "Isamu Noguchi: Stones and Paper" (documentary)

Michael Radford, "The Postman" (feature)

Larry & Andy Wachowski, "The Matrix" (feature)

Ang Lee, "Eat, Drink, Man, Woman" (feature)

Lee Tamahori, "The Edge" (feature)

Chris Marker, "The Jetty" (short experimental)

Norman McLaren, "Pas du Deux" (short experimental)

Will Hindle, "Chinese Firedrill" (short experimental)

Akira Kurosawa, "Dreams" (feature)

Akira Kurosawa, "Ikiru" ["To Live"] (feature)

Digital Works

We will study a variety of digital works in class.

Galleries, Museums, & Hunt Library

Students are strongly encouraged to take advantage of the Carnegie Museum, the Andy Warhol Museum, and art galleries in the Pittsburgh area. In addition, the Miller Gallery, located in the Purnell Center, offer a regular series of exhibitions that deserve attendance. The Hunt Library also presents special exhibitions from time to time and has excellent collections of book art and rare books.

The College of Fine Arts offers special discount admission to a variety of cultural events in Pittsburgh, including museums. Visit the Dean's office for more information.

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Introduction

Mon., Aug. 27 The History of Design and the Problem of Interaction

Part 1. Searching for Data

Wed., Aug. 29 The "Object" of Study: From the Given to the Taken

First Assignment Given

Mon., Sept. 3 LABOR DAY—NO CLASS

Part 2. Interpretations

- **A. Conceptions of Objective Circumstances: Entitative Interaction—Interface**

Wed., Sept. 5 Mechanisms of Behavior: Communication Theory

Reading:

Warren Weaver, "The Mathematics of Communication"

John Fiske, "Communication Theory," from **Introduction to Communication Studies**

Recommended Viewing Before Class

Will Hindle, "Chinese Firedrill"

Mon., Sept. 10 Cognitive Science and Information Processing

Reading:

Herbert A. Simon, from **Models of Thought**, vol. 1, "Preface" and "How Big is a Chunk?"

George A. Miller, "The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information"

Wed., Sept. 12 Social Life: Semantics and Pragmatics

Reading:

Edward T. Hall, "Adumbration as a Feature of Intercultural Communication"

John C. Condon, Jr., "Introduction to an Attitude" and "When People Talk With People,"
from **Semantics and Communication**

Recommended Viewing Before Class

Vittorio DeSica, "The Bicycle Thief"

Supplementary Reading

Norbert Wiener, from **The Human Use of Human Beings: Cybernetics and Society**, "Cybernetics in History," "Progress and Entropy,"
"Rigidity and Learning: Two Patterns of Communicative Behavior"

● **B. Relating Man to Man: Existential Interaction—Transaction**

Mon., Sept. 17 Personal Perspective in the Creation and Projection of Meaning

Reading:

Dean C. Barnlund, "Communication: The Context of Change"

Recommended Viewing Before Class

William Smock, "Isamu Noguchi: Stones and Paper"

Second Assignment Given

Wed., Sept. 19 Transactions

Reading:

Erving Goffman, "Facial Engagements"

Carl Rogers, selections from **On Becoming a Person**

"Personal Thoughts on Teaching and Learning"

"Significant Learning: In Therapy and in Education"

"Dealing with Breakdowns in Communication—Interpersonal and Intergroup"

Recommended Viewing Before Class

Michael Radford, "The Postman"

Mon., Sept. 24 A Classic Foundational Theory of Interaction Design

Reading:

Henri Bergson, selection from Ch. II., **Time and Free Will**

Recommended Viewing Before Class

Larry & Andy Wachowski, "The Matrix"

Supplementary Reading

Herbert Blumer, "The Nature of Symbolic Interactionism"

Sol Worth and Larry Gross, "Symbolic Strategies"

- **C. What the Human Can Become: Essentialist Interaction—Human Interaction**

Wed., Sept. 26 Problematic Perspective on the Relationships of Character, Arts, and Environment

Reading:

John Dewey, "Education as a Necessity of Life" and "Education as a Social Function," from **Democracy and Education**

Recommended Viewing Before Class

Ang Lee, "Eat, Drink, Man, Woman"

Supplementary Reading

John Dewey, from **Logic: The Theory of Inquiry**,
 "The Existential Matrix of Inquiry: Biological"
 "The Existential Matrix of Inquiry: Cultural"

Mon., Oct. 1 Action and Experience: The Foundational Theory of Interaction Design

Reading:

John Dewey, "Having an Experience," from **Art As Experience**

Recommended Viewing Before Class

Lee Tamahori, "The Edge"

Wed., Oct. 3 Dynamic Form

Reading:

Kenneth Burke, "The Nature of Form," from **Counter-Statement**
 Seamus Heaney, "Alphabets," from **The Haw Lantern**

Recommended Viewing Before Class

Norman McLaren, "Pas du Deux"

NO CLASS

Mon., Oct. 8 The Classic Study of Dynamic Interactive Form

Reading:

Aristotle, **Poetics**

Third Assignment Given

Recommended Viewing Before Class

Chris Marker, "The Jetty"

- **D. The Ideals Which Inspire Us: Ontological Interaction—Participation**

NO CLASS

Wed., Oct. 10 Spiritual and Rational Perspective on Reality: A Classic Theory of Interaction Design

Reading:

Plato, **Phaedrus** (<http://the-tech.mit.edu/Classics/Plato/phaedrus.sum.html>)

Recommended Viewing Before Class

Akira Kurosawa, "Ikiru" (*strongly recommended*)
 Akira Kurosawa, "Dreams"

Mon., Oct. 15

Reading:

Plato, **Phaedrus** (cont.)

Supplementary Reading

Paul Rand, selections from **A Designer's Art**
 Kenji Ekuan, "The Aesthetics of Simplicity: Small but Powerful"

Part 3. Arts, Methods, & Techniques

- **A. What is an Art?**

Wed., Oct. 17 The Threads of Culture: Formal and Material Themes

Fourth Assignment Given

Mon., Oct 22 MID-SEMESTER BREAK—NO CLASS

- **B. What is a Product?**

Wed., Oct. 24 Traditional Model of Products

Reading:

Laszlo Moholy-Nagy, "Design Potentialities"

Mon., Oct. 29 Interactive Model of Products: Communications, Artifacts, Activities, and Environments

Reading:

Richard Buchanan, "Good Design in the Digital Age"

Supplementary Reading

Ivan Illich, **In the Vineyard of the Text**

Brenda Laurel, "The Nature of the Beast," from **Computers as Theatre**

Richard A. Lanham, "The Electronic Word: Literary Study and the Digital Revolution," from **The Electronic Word: Democracy, Technology, and the Arts**

- **C. What is Information?**

Wed., Oct. 31 Information and Experience: Data, Facts, Connections, and Principles

Reading:

K. J. McGarry, "To Know and To Be Informed," from **The Changing Context of Information: An Introductory Analysis**

- **D. The Arts of Communication and Interaction Design**

Mon., Nov. 5 Rhetoric and Poetics

Reading:

Wayne C. Booth, "The Rhetorical Stance"

Richard Buchanan, "Rhetoric, Humanism, and Design," from **The Idea of Design**

Supplementary Reading

George Nelson, "Design as Communication," from **Problems of Design**

Richard Buchanan, "Design and the New Rhetoric: Productive Arts in the Philosophy of Culture"

Brenda Laurel, Ch. 2-5, **Computers as Theatre**

Richard A. Lanham, "Digital Rhetoric and the Digital Arts," from **The Electronic Word: Democracy, Technology, and the Arts**

Wed., Nov. 7 Grammar, Semiotic, and Dialectic

Reading:
Philip Meggs, "The Elements of Graphic Design," from **Type and Image: The Language of Graphic Design**
Roland Barthes, "The Rhetoric of the Image"

Supplementary Reading

Paul de Man, "Semiology and Rhetoric," from **Allegories of Reading**
Raymond Williams, Ch. 2, "Cultural Theory," from **Marxism and Literature**

Plato, **Republic**, Bk. VII, Myth of the Cave & the Nature of Dialectic

● **E. Practicing Interaction Design**

Mon., Nov. 12 Design Process and Practice

Wed., Nov. 14 Methods of Invention (1)

Fifth Assignment Given

Reading:

G. K. Chesterton, "A Defense of Nonsense"

Richard Buchanan, "Wicked Problems in Design Thinking," from **The Idea of Design**

Mon., Nov. 19 Methods of Invention (2)

Reading:

Kenneth Burke, "Introduction: The Five Key Terms of Dramatism," from

A Grammar of Motives

Richard McKeon, "Creativity and the Commonplace," from **Rhetoric: Essays in Invention and Discovery**

Wed., Nov. 21 THANKSGIVING—NO CLASS

Mon., Nov. 26 Methods of Visualization (1) *Schemata for Navigating Information Environments*

Reading:

David Hyerle, **Visual Tools for Constructing Knowledge**

Supplementary Reading

Kenneth Burke, "The Four Master Tropes," from **A Grammar of Motives**

Wed., Nov. 28 Methods of Visualization (2) *Discovery, Learning, & Memory in Information Environments*

- Information Architecture—the logic of information in user experience
- Information Design—the visual design of composition & layout for information
- Information Typography—the grammar of information expression

Supplementary Reading

Joseph D. Novak and D. Bob Gowin, "Concept Mapping for Meaningful Learning," from **Learning How to Learn**

Mon., Dec. 3 Summary: Design & New Product Development

Part 4. Principles and Values

Sixth Assignment Given

Wed., Dec. 5 Principles and Values in Interaction Design

Reading:

Richard Buchanan, "Human Dignity and Human Rights: Thoughts on the Principles of Human-Centered Design"

Seamus Heaney, **Crediting Poetry: The Nobel Lecture**

Supplementary Reading

St. Augustine, **On Christian Doctrine**, Book I, iii-iv

Carl Mitcham, "Ethics into Design," from **Discovering Design**

Mon., Dec. 10 Pluralism and Objectivity

Reading:

Kenji Ekuan, "Lifestyle Technology: Shaping Human Character and the Ideal of the Single Blossom," from **The Aesthetics of the Japanese Lunchbox**

Richard McKeon, "Communication, Truth, and Society," from **Selected Writings of Richard McKeon, Vol. 1, Philosophy, Science, and Culture**

Supplementary Reading

Richard Buchanan, "Branzi's Dilemma: Design in Contemporary Culture"