

Beyond usability: Ethical design

Alex Kirlik

Mensch und Computer 2009

BERLIN

Usability

- Minimal, necessary condition for good design
- We have come a long way, and usability is still our “bread and butter,” our “meat and potatoes” our daily “grub” . . .



Erst kommt das Fressen,



Erst kommt das Fressen, dann kommt die Moral.



We need a lot of engineers in the modern world,



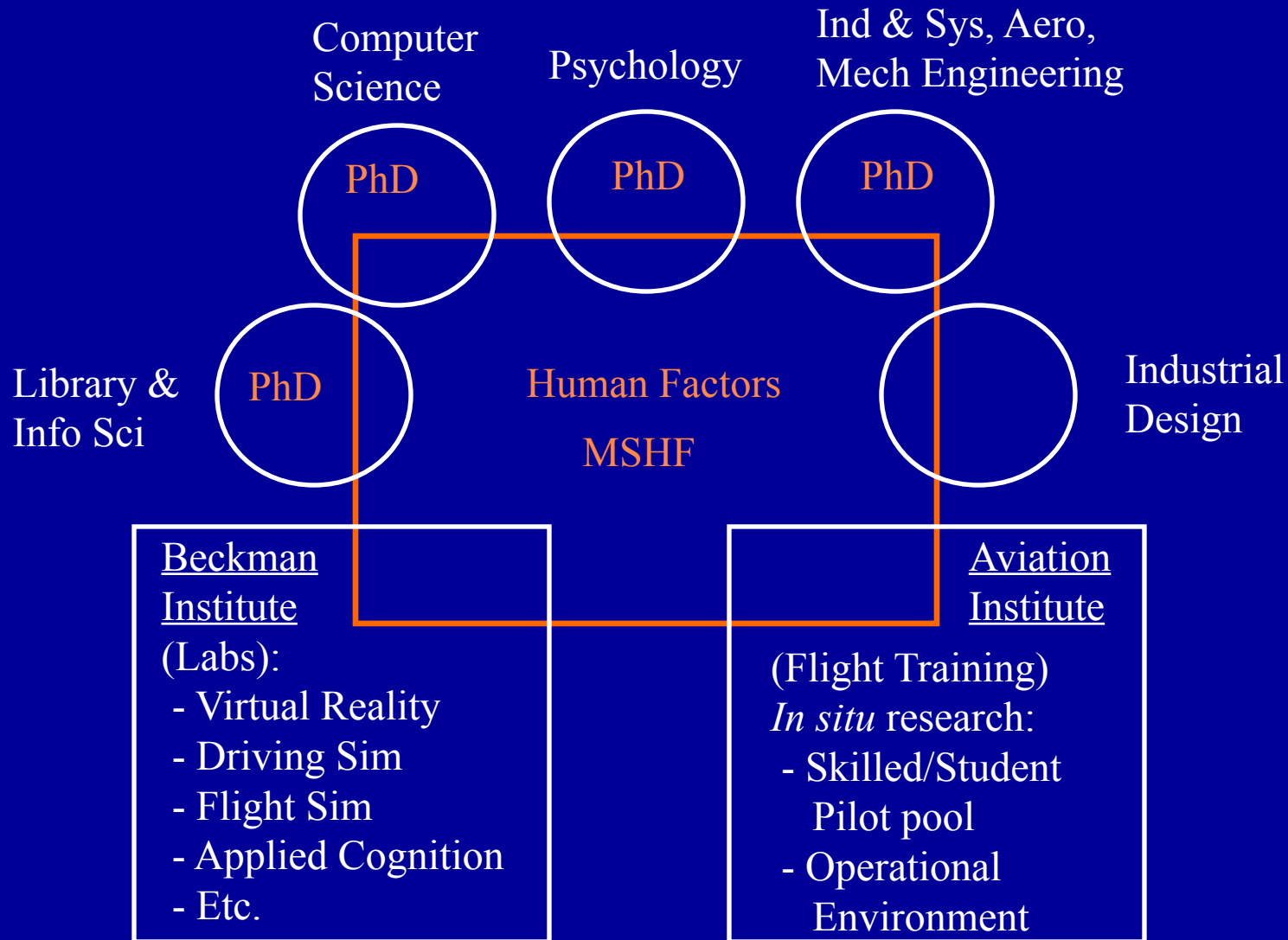
*We need a lot of engineers in the modern world,
but we do not want a world of modern engineers.*

Ethical Design

Toward an Ethics of Technological Possibilism



How graduate **Human-Technology Interaction** education works at U. Illinois



View from my hotel room, 2002, New York City



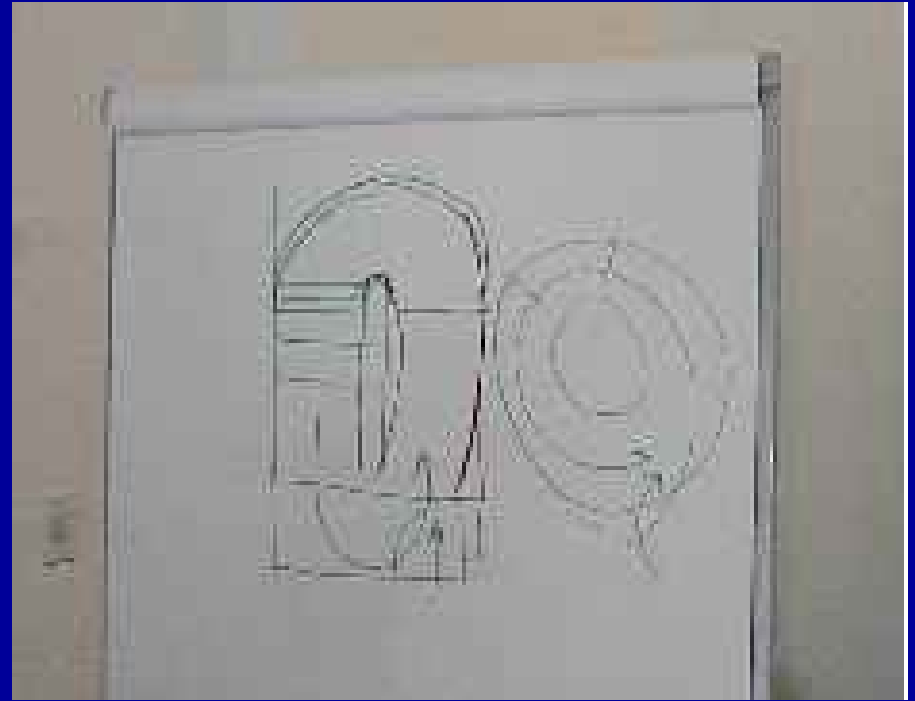
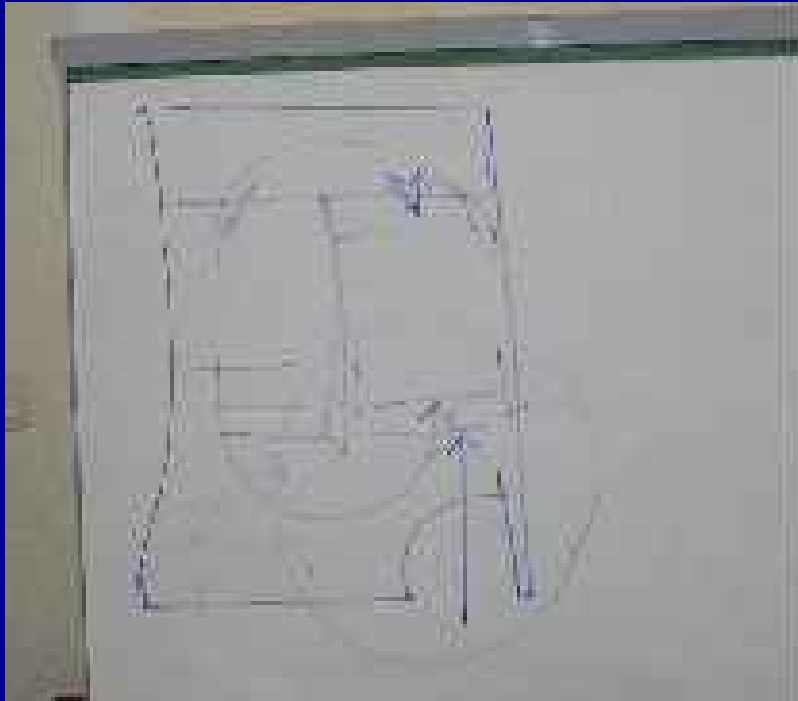




Mr. Geoffrey Wharton

(at left, with Mayor Bloomberg and Mr. Larry Silverstein)

Designing the new WTC-7 Building at Skidmore, Owings & Merrill, NYC



The new WTC-7 Building







Martin Amis



*The Second Plane: September 11,
Terror and Boredom*

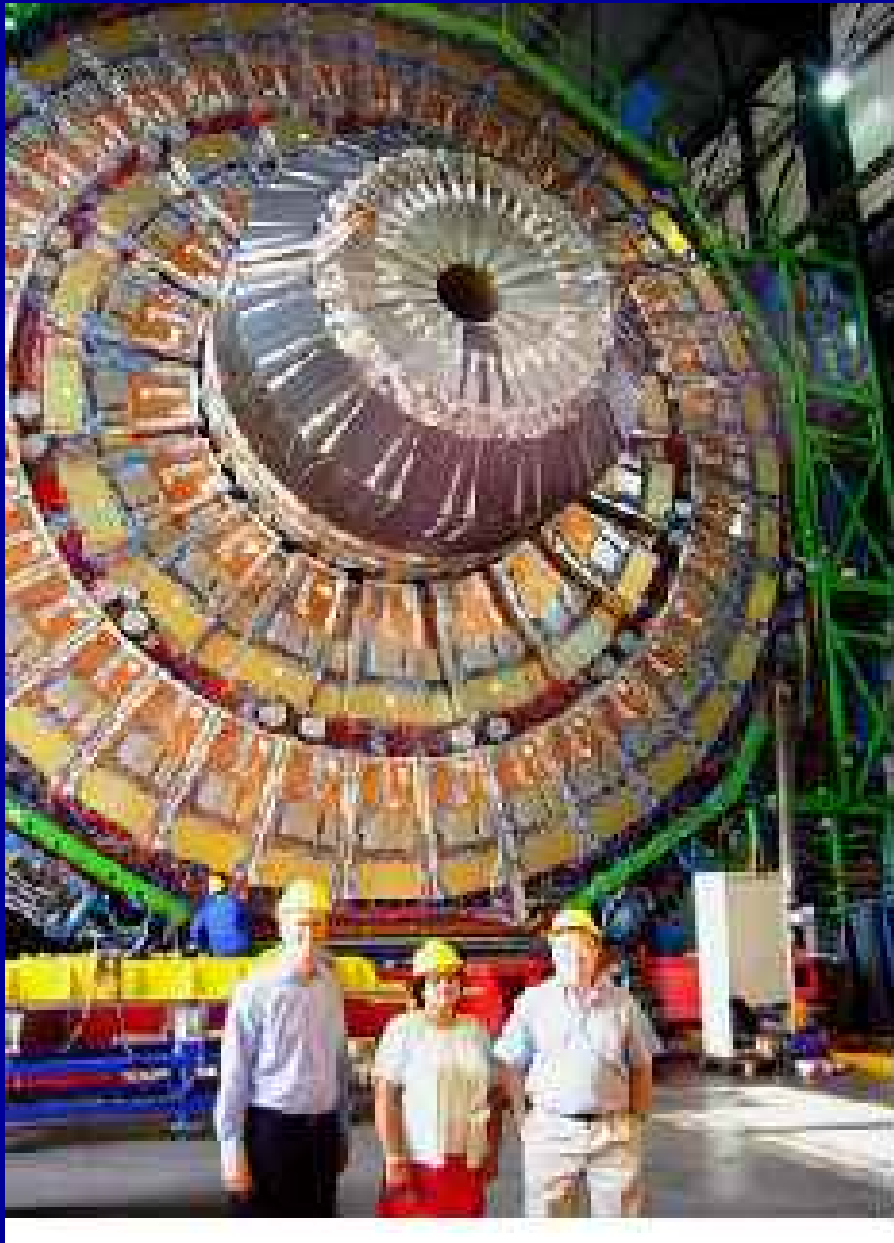


Martin Amis

From *The Second Plane*:

The message of September 11 ran as follows: America, it is time you learned how implacably you are hated.

United Airlines Flight 175 was an Intercontinental Ballistic Missile, launched in Afghanistan, and aimed at her innocence.



BIG Science

Post-War Physics



“Physics ended the war”



What was “the Physics” of September 11?



Kant

The Categorical Imperatives



Act only according to the maxim whereby you can at the same time will that it should become a universal law.

Kant

The Categorical Imperatives



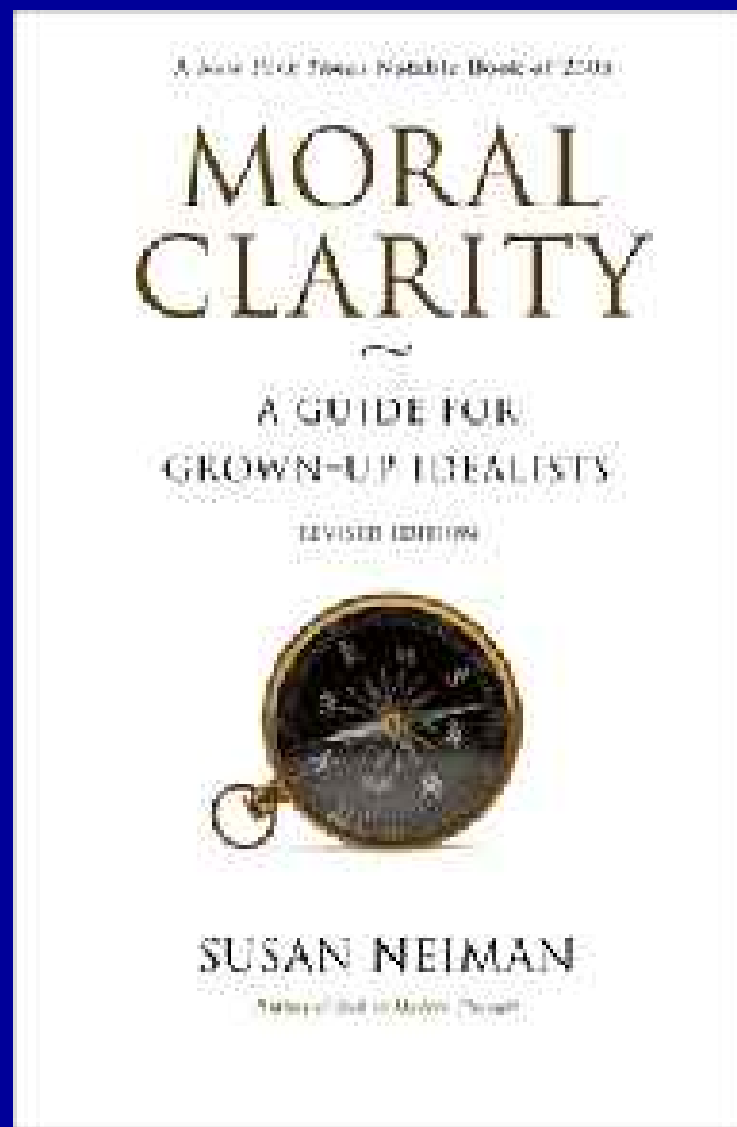
Kant

Act only according to the maxim whereby you can at the same time will that it should become a universal law.

Act in such a way that you treat humanity, whether in your own person or in the person of another, always at the same time as an end and never simply as a means.



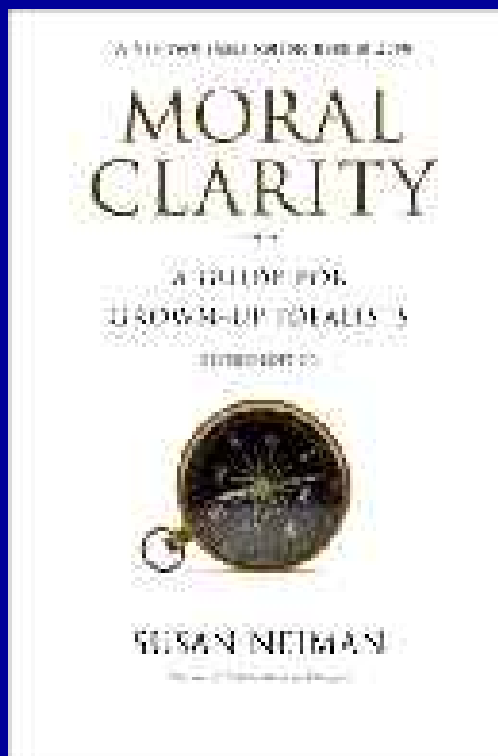
Susan Neiman



On *Moral Clarity*

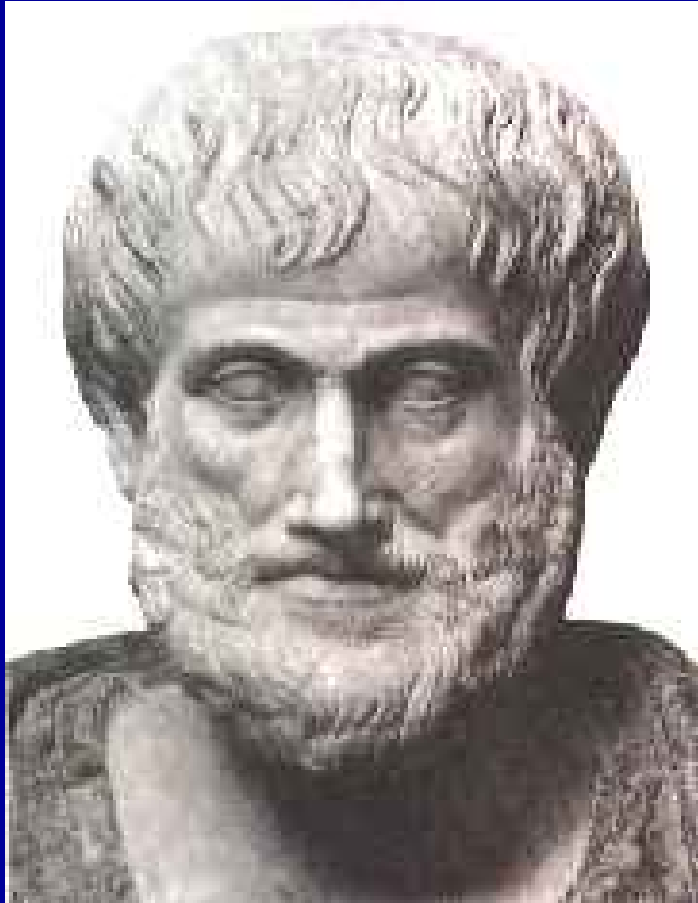


Simon Blackburn



Philosophically, one of the deepest discussions in the book is Neiman's appropriation of Kant's doctrine of freedom. This is a notoriously treacherous area, but Neiman correctly aligns it with the human capacity for noticing or inventing (it does not necessarily matter which) possibilities for action. As well as whatever is the case, we have what might be the case, or what we could make come about, as well as what ought to be the case. – Simon Blackburn

However



*What admits of being otherwise
includes what is produced and
what is done in action.*

From Nichomachean Ethics

Aristotle

“What is Produced”

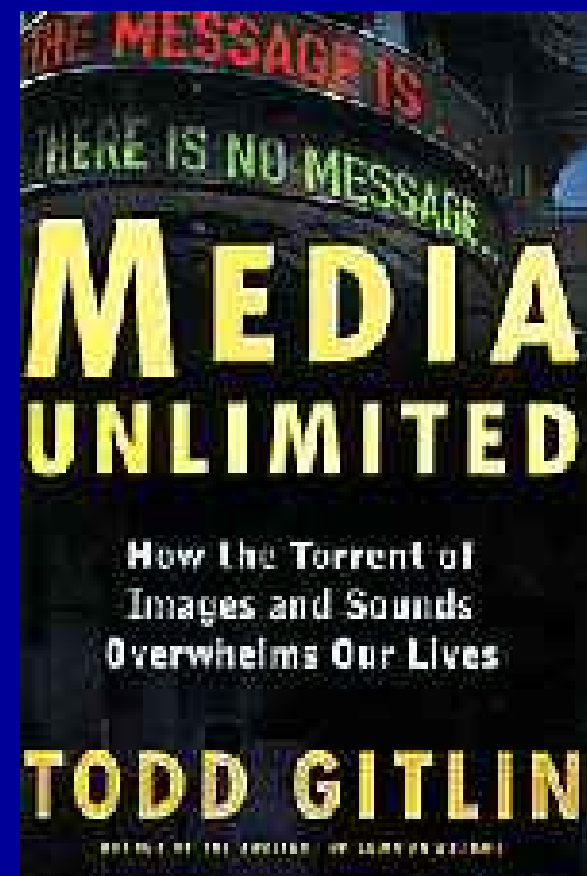
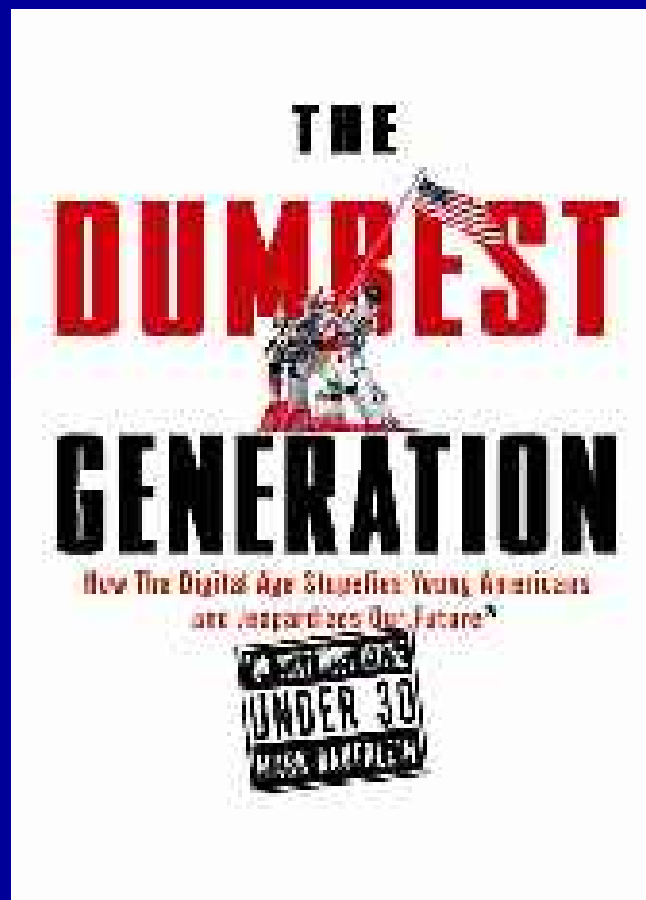
So ethics extends beyond action to technology

“What is Produced”

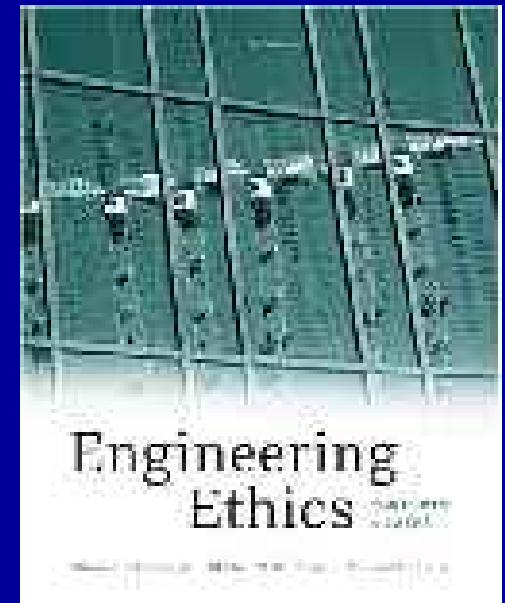
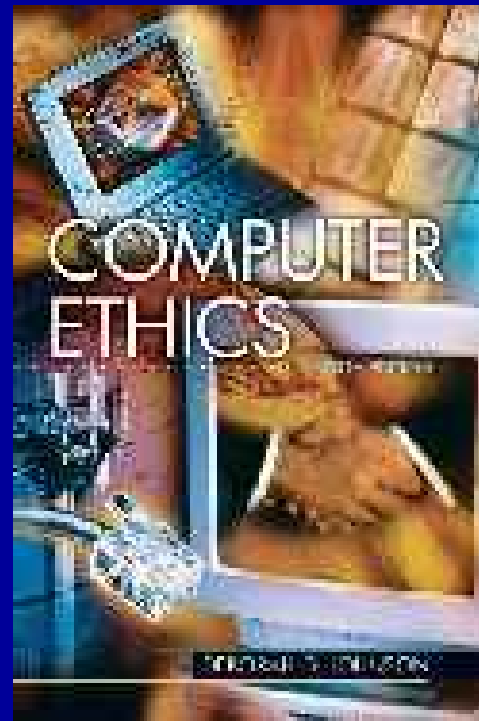
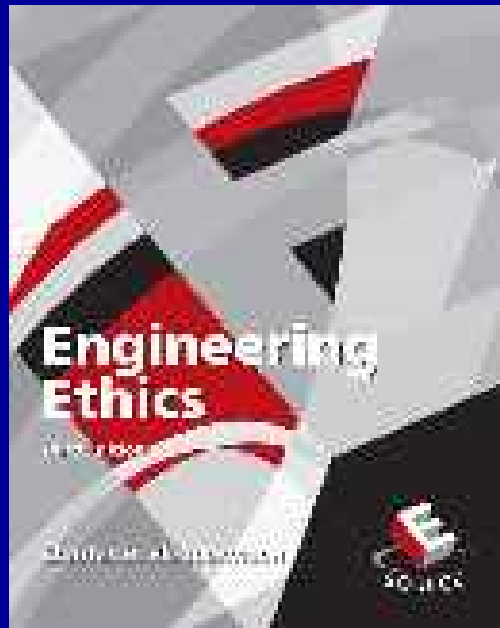
So ethics extends beyond action to technology

What the rest of this talk is *not* about . . .

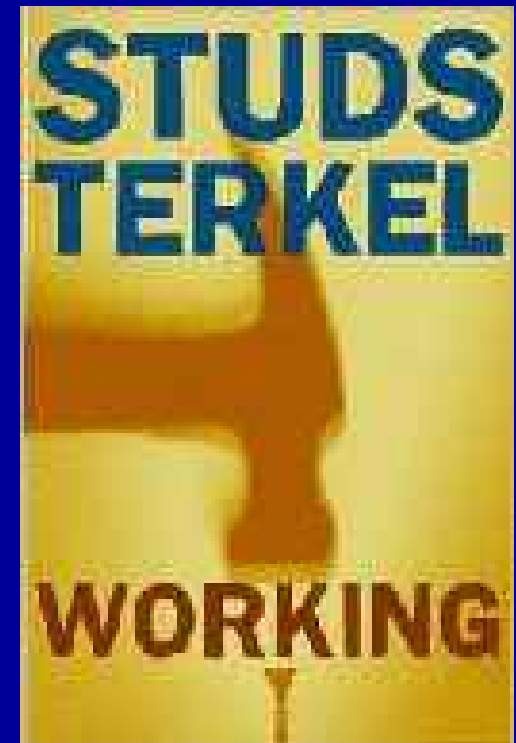
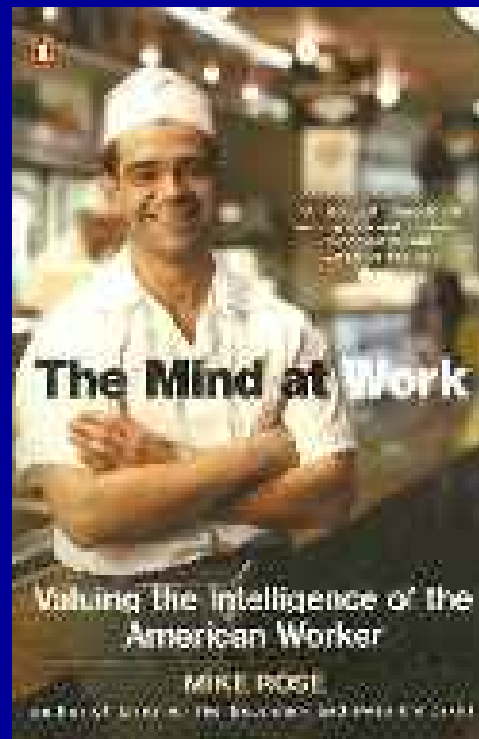
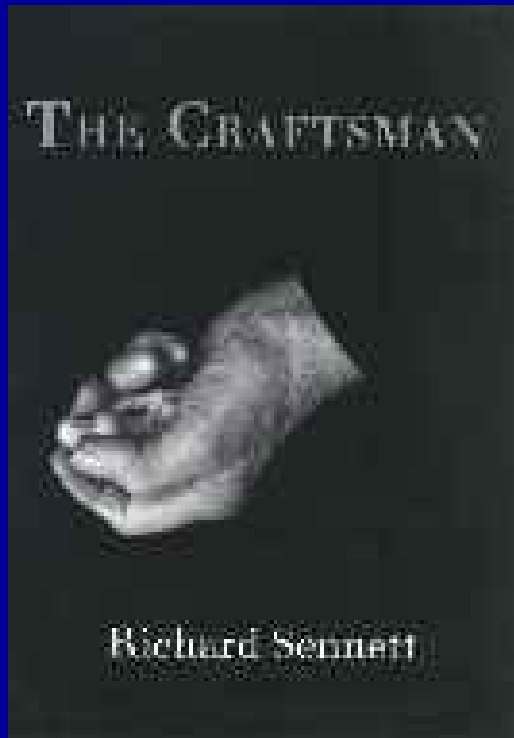
Not Cultural Criticism of Technology or New Media



Not “Professional Ethics” or Privacy, Security ... on the Internet

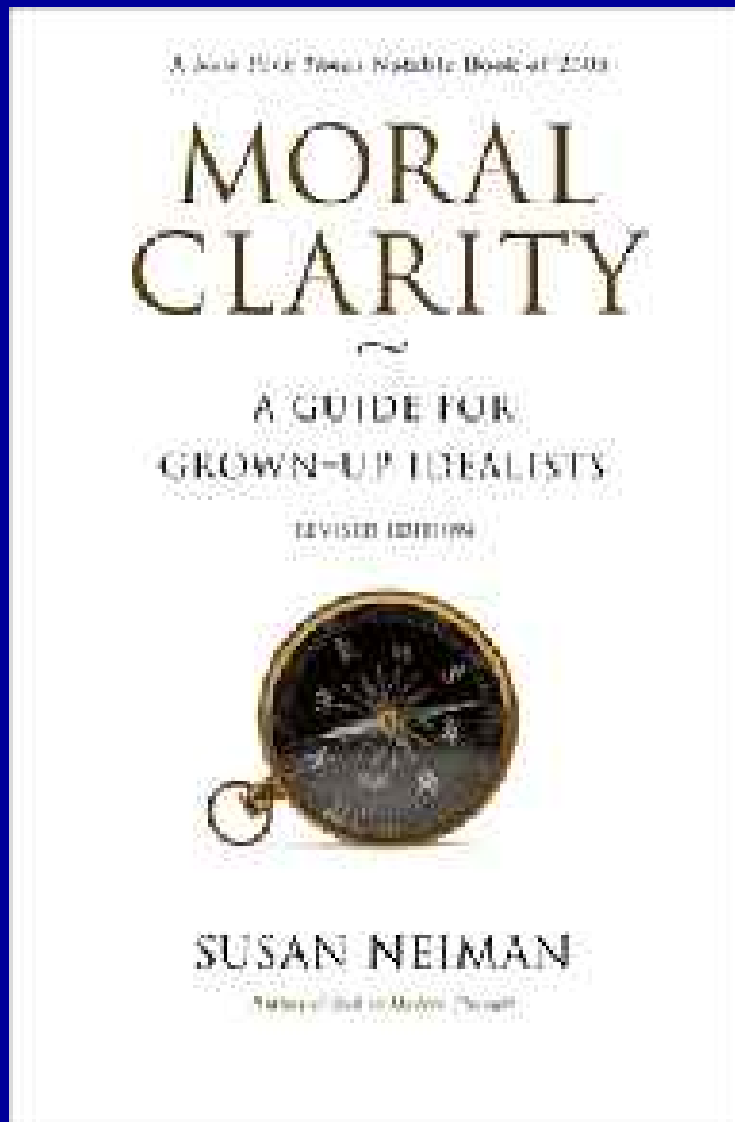


Not Privileging the “Good Old Days”



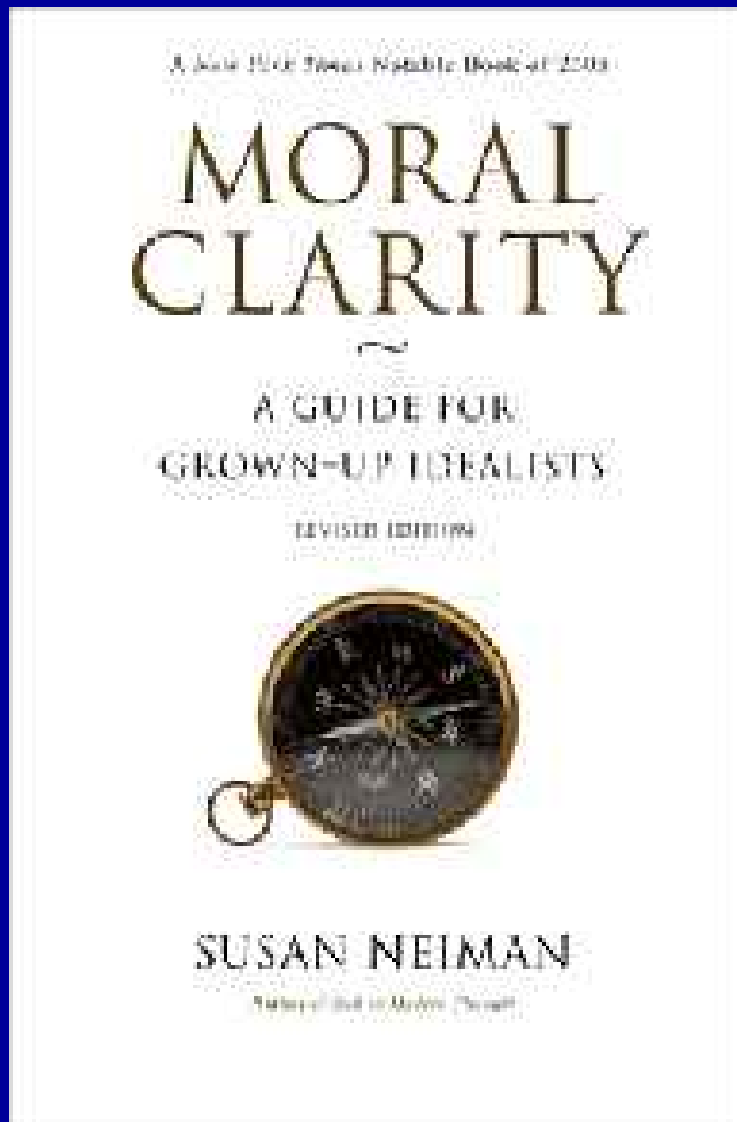
Toward an Ethics of Technological Possibilism

Neiman on Ethics and Technology



Contemporary technologies are as neutral as more primitive tools; the same hammer that built a frame can smash it.

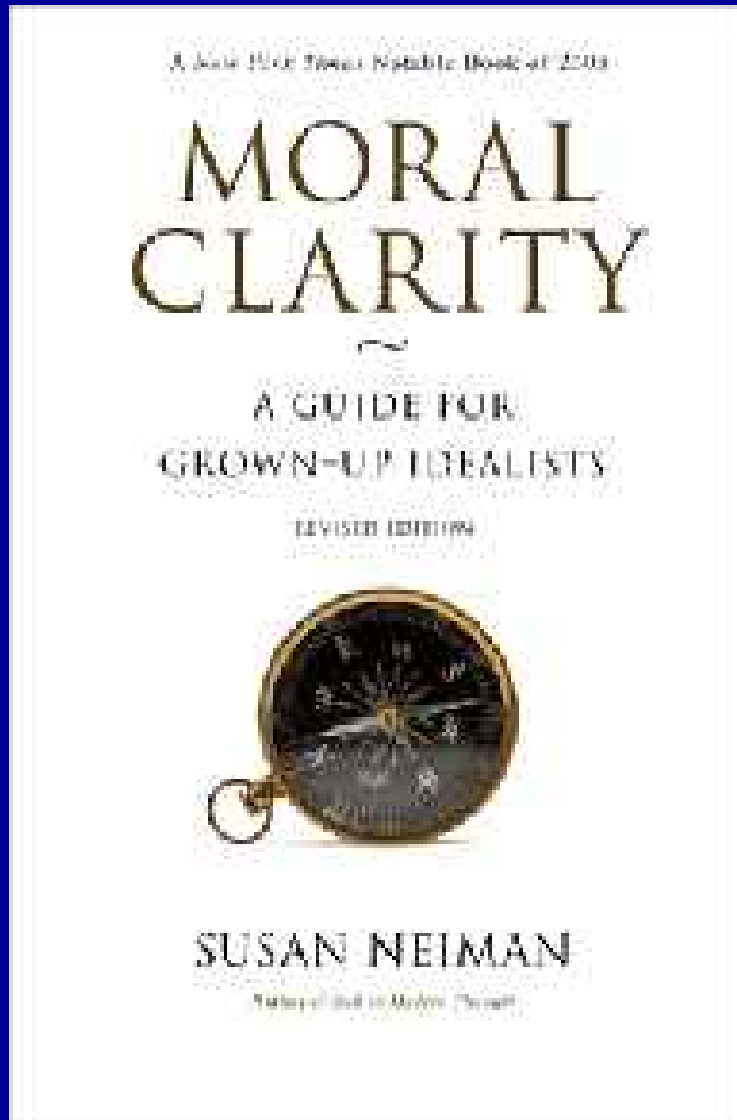
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Not nineteen lasers, but nineteen box cutters were enough to topple the World Trade Center.

Neiman on Ethics and Technology



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Is this the correct analysis?

History

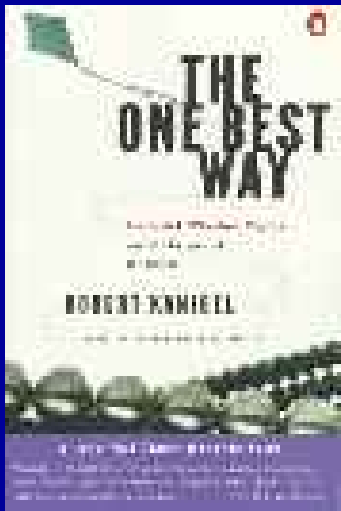


Frederick W. Taylor
(1856 - 1915)

History



Frederick W. Taylor
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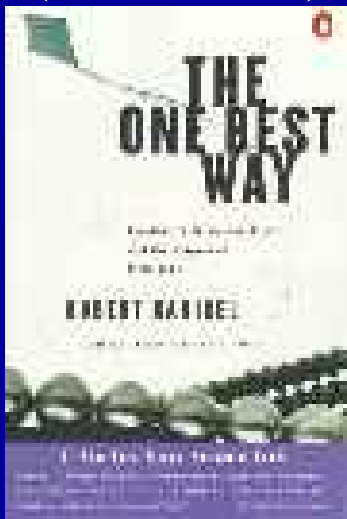
History



HF Textbooks

Frederick W. Taylor
(1856 - 1915)

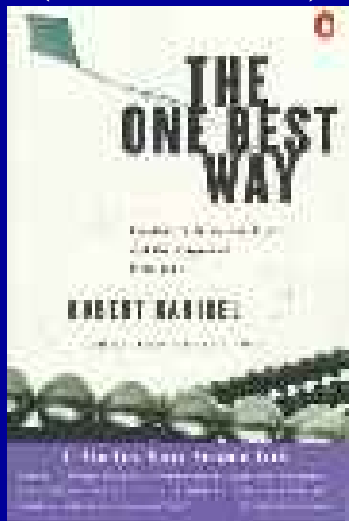
+ Experimental & Cognitive Psychology



History



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HF Textbooks



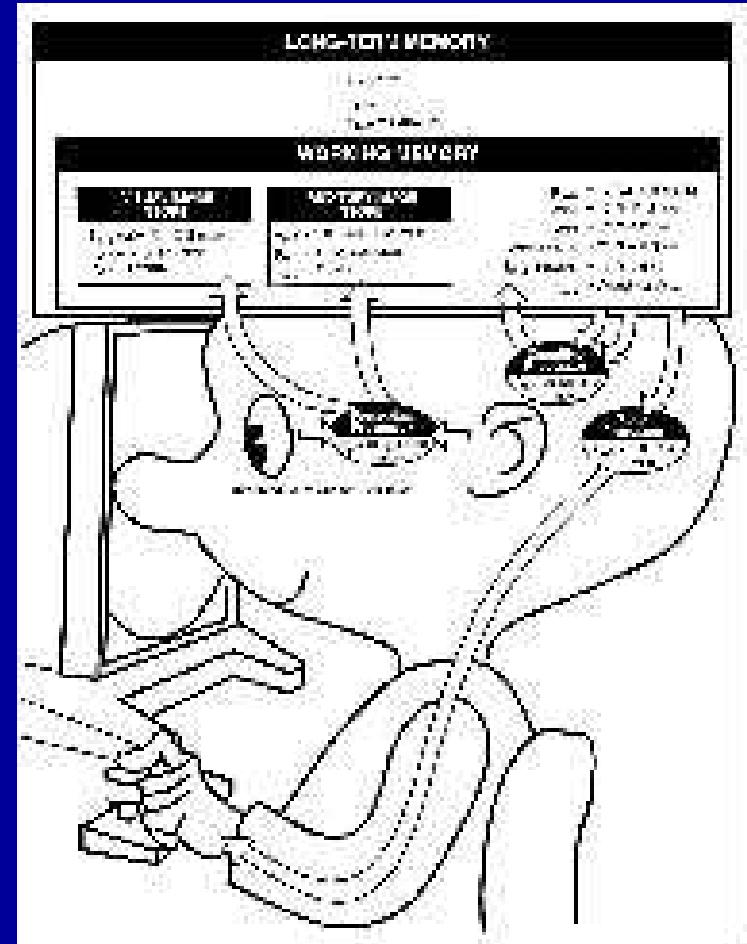
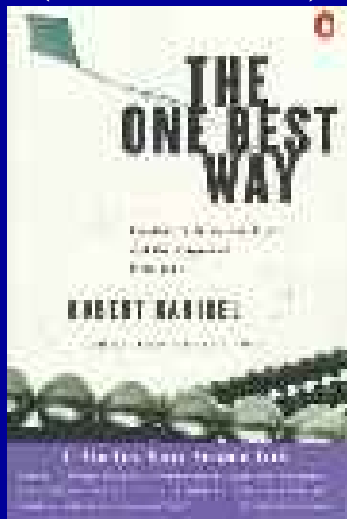
HF Handbooks

History



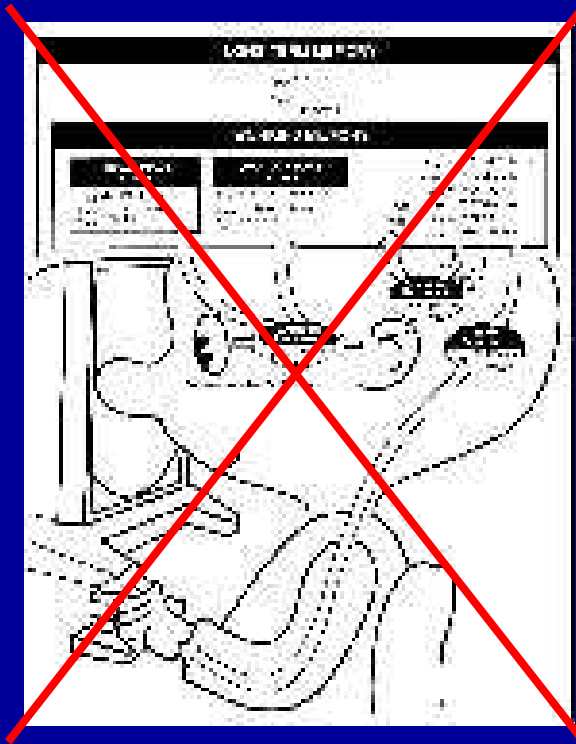
+ Early Cognitive Psych
and Cognitive Science

Frederick W. Taylor
(1856 - 1915)



Classical HCI research (e.g.,
Card, Moran and Newell)

Largely Rejected by European Work Psychologists



Siegfried Greif

In favor of more humanistic approaches such as activity theory

1984

Journal of Experimental Psychology:
Human Perception and Performance
1984, Vol. 10, No. 3, 683-703

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American Psychological Association, Inc.

Perceiving Affordances: Visual Guidance of Stair Climbing

William H. Warren, Jr.
University of Connecticut

How do animals visually guide their activities in a cluttered environment? Gibson (1979) proposed that they perceive what environmental objects offer or *afford* for action. An analysis of affordances in terms of the dynamics of an animal-environment system is presented. Critical points, corresponding to phase transitions in behavior, and optimal points, corresponding to stable, preferred regions of minimum energy expenditure, emerge from variation in the animal-environment fit. It is hypothesized that these points are constants across physically similar

Meanwhile

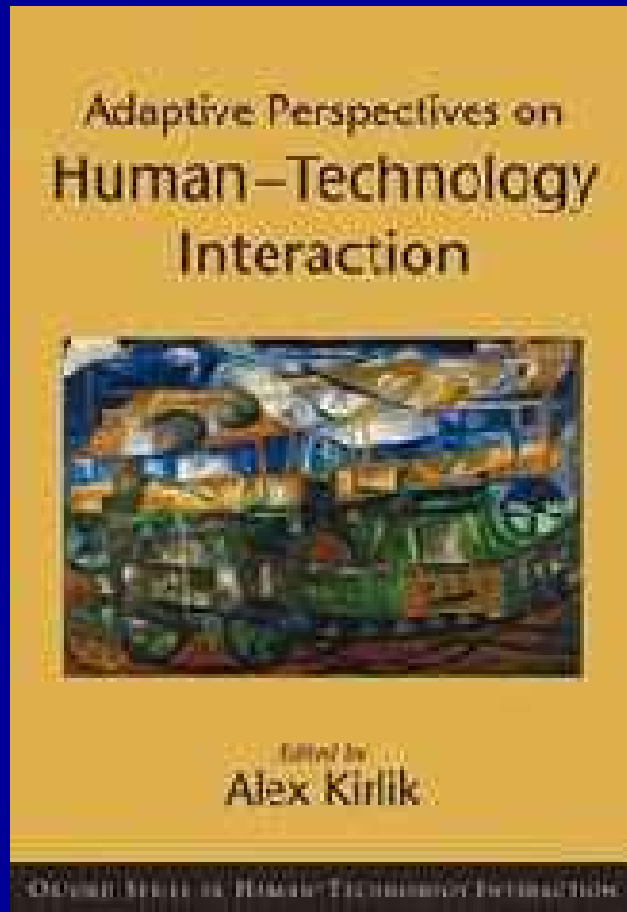


Supervisory Control in a Dynamic and Uncertain Environment: A Process Model of Skilled Human-Environment Interaction

Alex Kirlik, R. A. Miles, and Richard J. Zeigler

In order to describe the simulated world as a set of dynamic affordance distributions defined over the available craft actions, the degree of match between the environmental structure and the action-capabilities of each craft were quantified. As this measure of compatibility can take on intermediate values, in the present approach affordances were not considered to be all-or-none entities. Rather, affordance values were used to indicate the degree of match between the environmental structure and the functional capability of each craft at each point in time. As Warren [56] has noted, as the match between the environmental structure and the actor's action capabilities is varied, two qualitative features of the actor-environment system emerge. Warren has described these features as optimal points at which action is most efficient or most comfortable and as critical points that specify the boundary between phases in the actor-environment system in which different actions are most appropriate.

2006



An Ecological Approach to
the Analysis and Design of
Human-Machine Systems.



+



Egon Brunswik

James J. Gibson

2006

Adaptive Perspectives on
Human–Technology
Interaction



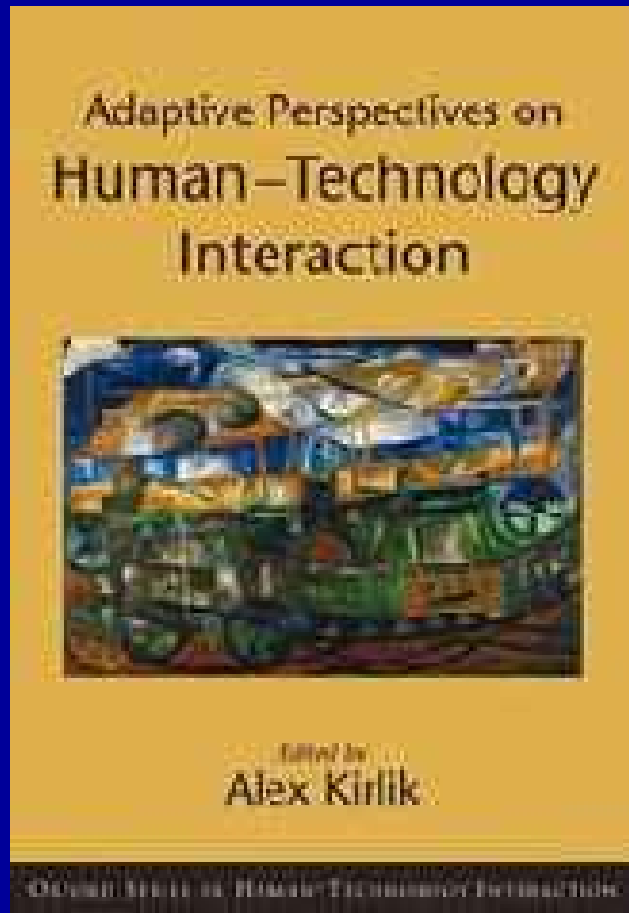
Edited by
Alex Kirlik

An Ecological Approach to
the Analysis and Design of
Human-Machine Systems.

Grounded in Egon Brunswik's
theory of probabilistic functionalism
and methodology of representative
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2006

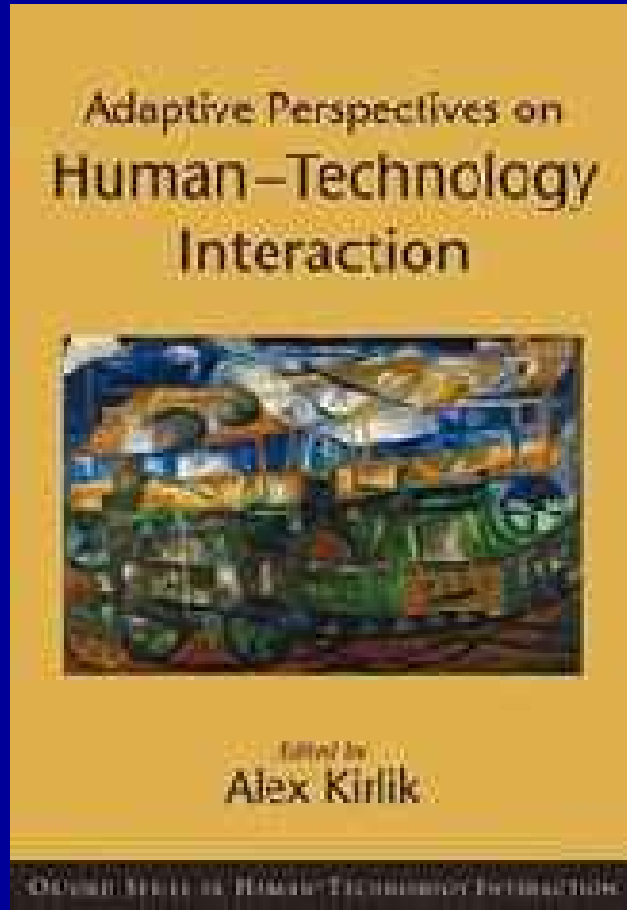


An Ecological Approach to the Analysis and Design of Human-Machine Systems.

Grounded in Egon Brunswik's theory of probabilistic functionalism, methodology of representative design, & Gibson's affordance theory.

The environment is hardly incidental to behavior, but creates the playing field for possible behavior.

2006



A Review:

Designing interactive technology needs predictive, practical theoretical models of the user, but cognitive psychology's woefully inadequate treatment of the environment has, in turn, not allowed adequate treatment of the mind-environment mutual co-adaptation on which systems depend. Not only does Brunswik's analysis provide a coherent way to think about the problems of perception, mind, environment, and adaptation, but in a sense Brunswik gets the last theoretical laugh in one of psychology's oldest arguments.

2006

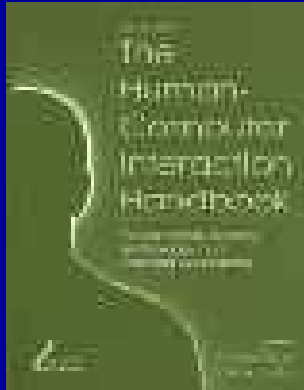


Stuart Card

A Review:

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Implications for Ethics of Technology



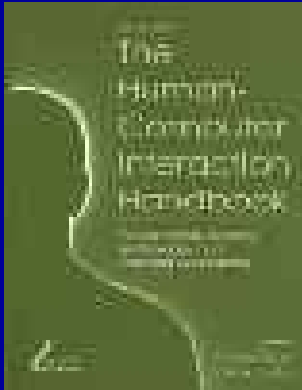
Jacko & Sears,
2003

Friedman & Kahn: *Human Values, Ethics and Design.*

Three approaches to technological ethics

- Embodied (technological determinism)
- Exogenous (its all about social forces)
- Interactionist: Whereas the features or properties that people design into technologies support certain values and hinder others, the technology's actual use depends on the goals of the people interacting with it.

Implications for Ethics of Technology



Friedman & Kahn: *Human Values, Ethics and Design*.

Three approaches to technological ethics

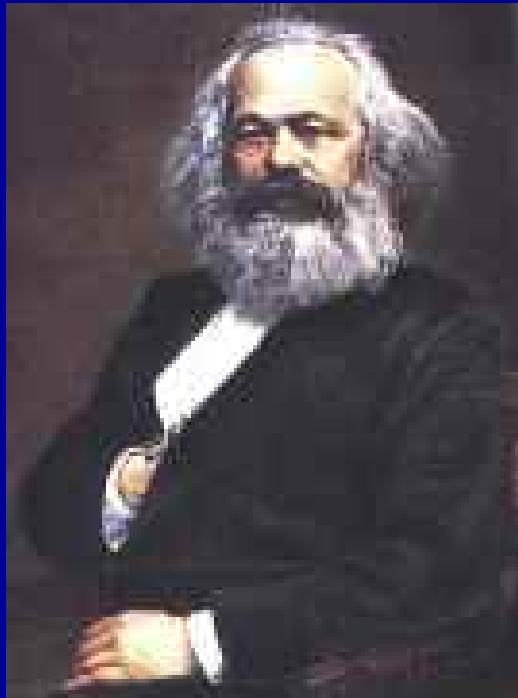
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Jacko & Sears,
2003

Susan Nieman

Implications for Ethics of Technology

Technological Determinism (only position that allows the design of technology to strongly influence behavior):



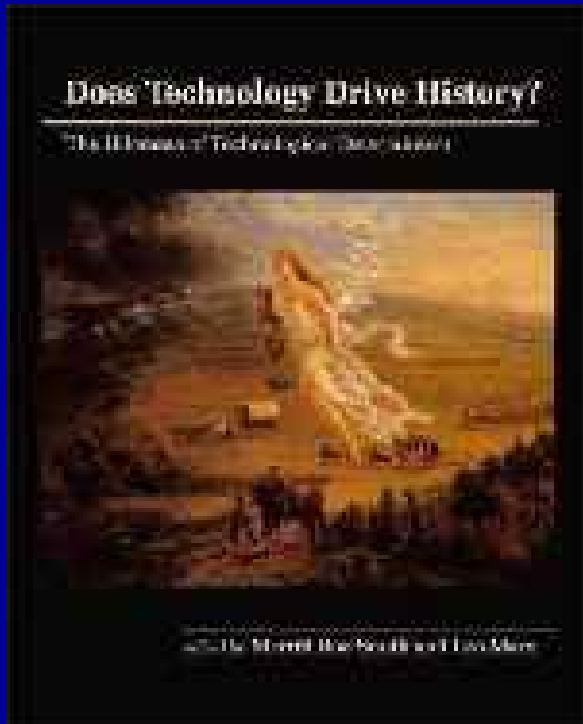
The windmill gives you society with the feudal lord: the steam-mill, society with the industrial capitalist.

From: *The Poverty of Philosophy*,
1847.

Karl Marx

Implications for Ethics of Technology

Technological Determinism (only position that allows the design of technology to strongly influence behavior):



Largely dismissed in modern scholarship:

Critics of (hard) determinism question the plausibility of imputing agency to 'technology' How can we reasonably think of this abstract, disembodied, quasi-metaphysical entity (technology) or of one of its artifactual stand-ins (e.g., the computer) as the initiator of actions capable of controlling human destiny? (M.R. Smith and L. Marx, 1994).

Implications for Ethics of Technology

Technological Determinism (only position that allows the design of technology to strongly influence behavior):



Bijker & Law (1992)



Bruno Latour: *Where are the missing masses? The sociology of a few mundane artifacts.*

Implications for Ethics of Technology

Technological Determinism (only position that allows the design of technology to strongly influence behavior):



Bruno Latour

The Berliner Key



NEWS & TRENDS | SEPTEMBER 10, 2009

Retailers Reprogram Workers In Efficiency Push

By VANESSA O'CONNELL

LANGHORNE, Pa. -- Retailers have a new tool to turn up the heat on their salespeople: computer programs that dictate which employees should work when, and for how long.

AnnTaylor Stores Corp. installed a system last year. When saleswoman Nyla Houser types her code number into a cash register at the Ann Taylor store here at the Oxford Valley Mall, it displays her "performance metrics": average sales per hour, units sold, and dollars per transaction. The system schedules the most productive sellers to work the busiest hours.

"We are under the gun to be a much more efficiently running organization," said Scott Knaul, director of store operations at the women's apparel retailer, which said earlier this year that it is closing 117 underperforming stores over the next few years. There was an initial "ego hit" for some employees, he said at a gathering of retailers in May. But the system, he said, has helped turn more store browsers into buyers.

Perhaps not Technology Determinism, but Technology Possibilism?

Such "workforce-management" systems are sweeping the industry as retailers fight to improve productivity and cut payroll costs. Limited Brands Inc., Gap Inc., Williams-Sonoma Inc. and GameStop Corp. have all installed them recently. Some employees aren't happy about the trend. They say the systems leave them with shorter shifts, make it difficult to schedule their lives, and unleash Darwinian forces on the sales floor that damage morale.

"There was a lot of animosity" toward the system, says Kelly Engle, who worked at an Ann Taylor store in Beavercreek, Ohio, until late last year. "Computers aren't very forgiving when it comes to an individual's life."

The systems stand to have a broad impact on the work lives of Americans. Some 15 million people work in the U.S. retail industry, making it the nation's third-largest private-sector employer. The work isn't especially lucrative. Many jobs are part-time, the hourly pay is low, and most sales floors aren't unionized. At Ann Taylor, part-time sales clerks have no guaranteed weekly minimum pay.

Perhaps not Technology Determinism, but Technology Possibilism?

The sluggish national economy has put pressure on many retailers to pinch pennies. "The single biggest controllable cost in retail is people," says Carl Steidtmann, chief economist at Deloitte LLP. Because few retail workers belong to unions, he says, it is easier for employers to "move people around."

Vendors of the systems claim they can boost productivity by 15% or more, and can help cut labor costs by 5% or more. Wal-Mart Stores Inc. just completed a yearlong rollout of a computerized scheduling system for 1.3 million workers. It cited 12% labor-productivity gains as a key reason for improved results in its fiscal quarter ended Jan. 31.

"There's been a natural resistance to thinking about human beings as pieces in a puzzle rather than individuals," says John M. Gibbons, a senior research adviser at the Conference Board and a former director of human resources at Gap.

"When you have those clear methods of measurement, and just-in-time delivery for supply-chain management, it's a natural transition to apply it to human resources as well."

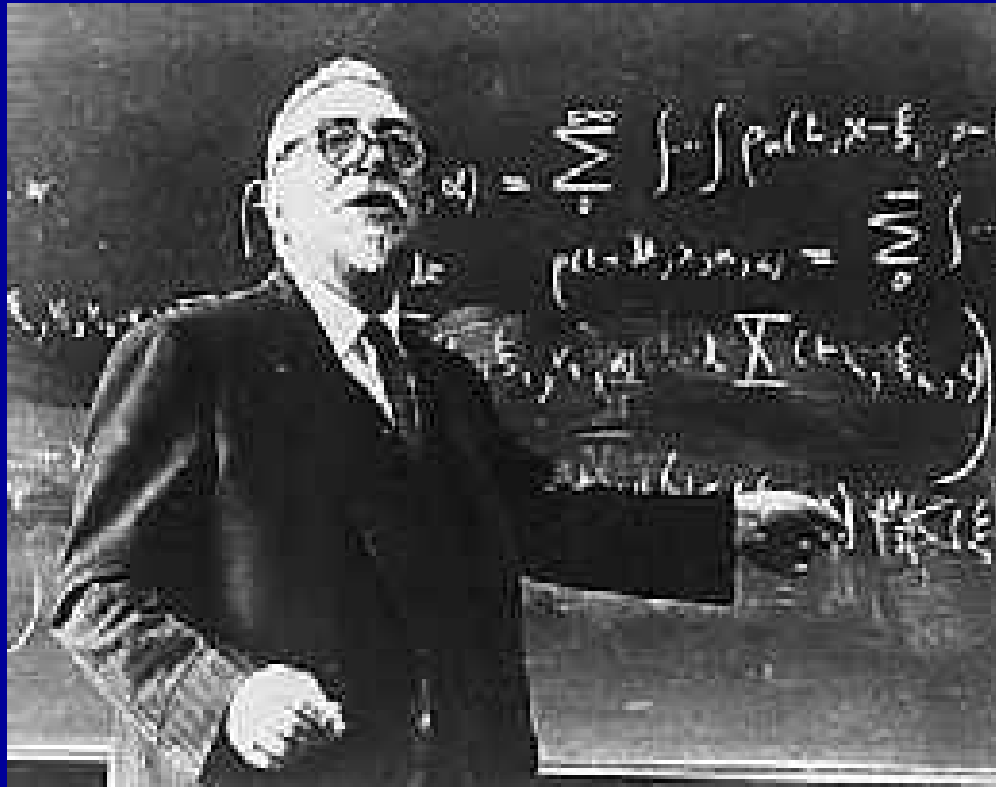
Perhaps not Technology Determinism, but Technology Possibilism?

AnnTaylor calls its system the Ann Taylor Labor Allocation System -- Atlas for short. It was developed by RedPrairie Corp., a retail-operations software firm based in Waukesha, Wis. "We liken the system to an airplane dashboard with 100 different switches and levers and knobs," said AnnTaylor's Mr. Kraul. "When we launched that, we messed with five of them." Giving the system a nickname, Atlas, he said, "was important because it gave a personality to the system, so [employees] hate the system and not us."

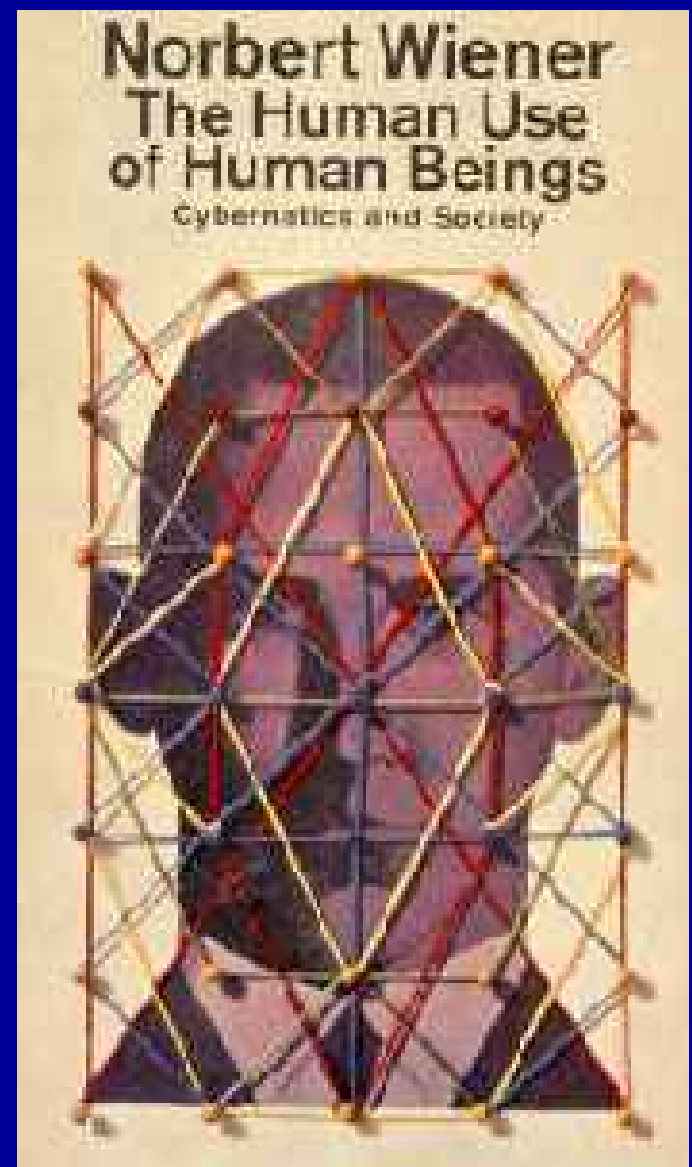
Information Technology and Automation are now able to do what Taylor could have only dreamed about:

Provide hard, rather than soft (training and incentive-based) constraints that define the playing field for human behavior, for the expression of freedom and dignity.

Onset of the Age of Digital Taylorism?



“Father of Cybernetics,” Norbert Wiener





From Sheridan & Ferrell, *Man-Machine Systems* (1974)

Thomas B. Sheridan

We believe that the engineer who deals with human performance should avoid two faults that have made the “efficiency expert” one of the most hated in industry: (1) the neglect of personal and of social variables, and (2) the use of people as means to ends they do not share and do not determine. If a person is to design tasks for others he has the responsibility to attempt to see the tasks and their implications in a wider context and to attempt to ensure that they are life-enhancing. This is not easy to do, nor are the criteria clear cut.. This, in the long run, is the demand of good engineering. The human use of man-machine systems is just the human use of human beings.

Beyond Constraining: Inventing New Possibilities for Action



Simon Blackburn
Philosophy Chair
Cambridge Univ.

Philosophically, one of the deepest discussions in the book is Neiman's appropriation of Kant's doctrine of freedom. This is a notoriously treacherous area, but Neiman correctly aligns it with the human capacity for noticing or inventing (it does not necessarily matter which) possibilities for action.



Were Nineteen Box Cutter Knives *the* Enabling Technology?

Were Nineteen Box Cutter Knives *the* Enabling Technology?

What was the “Physics” of September 11?

Were Nineteen Box Cutter Knives *the* Enabling Technology?



HF, HCI, Usability Engineering: The “Walk Up and Use” Jet Liner.

Technology is not value-neutral to the extent it either restricts or expands possibilities for human action.

Technology is not value-neutral to the extent it either restricts or expands possibilities for human action.

Technology's influence on behavior is not deterministic (Marx), but it is "hard" nevertheless in terms of what actions are possible and impossible.

History of Usability, HCI, etc.

1960s – 1980s

Interface Design (what?)

History of Usability, HCI, etc.

1990s – 2000s

Functionality (how?)



1960s – 1980s

Interface Design (what?)

Future of Usability, HCI, etc.

2010s - future

Purpose

(why?)

1990s – 2000s

Functionality

(how?)

1960s – 1980s

Interface Design

(what?)



Grenzenlos freil?

Toward Technological Possibilism as a
Foundation for Ethical Design

Thank you for your time and attention this morning