

CPSC 481

Foundations and Principles of Human Computer Interaction

James Tam

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CPSC 481 Administrative

James Tam

- Human-computer interaction (HCI)
- Computer-supported cooperative work (CSCW)
- Change awareness
- Games
- <http://www.cpsc.ucalgary.ca/~tamj/481>

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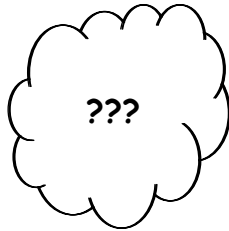
Office hours

- Office hours: MT 15:00 – 16:00
- By email any time
- By appointment: email or phone to arrange one
- Drop in for urgent requests (but no guarantees!)



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Feedback



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Human-Computer Interaction (HCI)

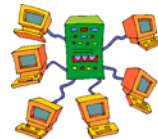
Most of Computer Science deals with the ‘technical’ side of computers.



Run computers faster!



Make computers store
more information!!



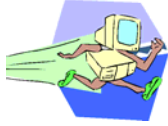
Increase the
networking capabilities
of computers!!!

- These technical issues (and others) are all very important but something is still missing...

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Human-Computer Interaction

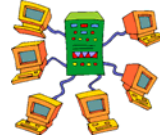
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Human-Computer Interaction

...but don't forget about the other side of the relationship.

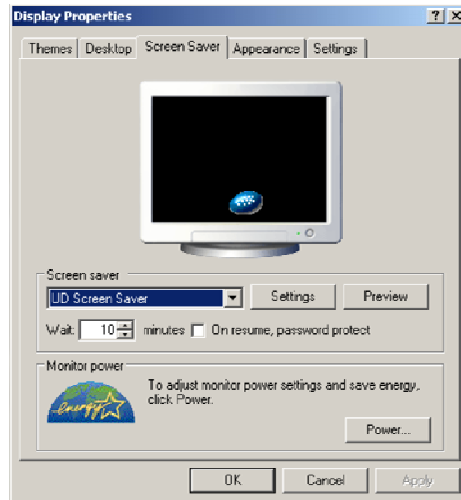
No matter how powerful the computer and how well written is the software, if the user of the program can't figure out how it works then the system is useless.

Software should be written to make it as easy as possible for the user to complete their task. (Don't make it any harder than it has to be).

This is just common sense and should/is always taken into account when writing software?

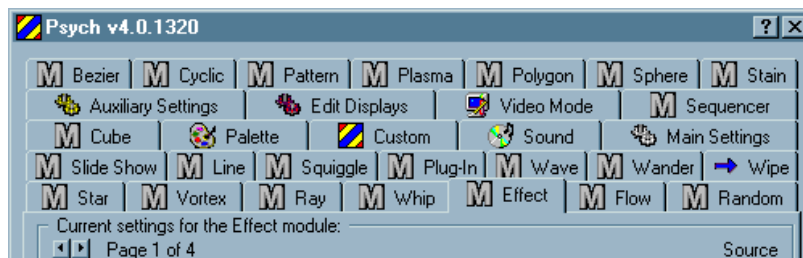
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Human-Computer Interaction: Not Just Common Sense Information



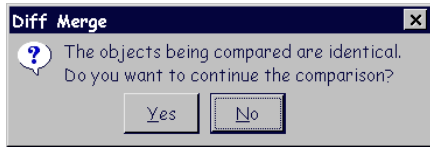
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Human-Computer Interaction: Not Just Common Sense Information (2)



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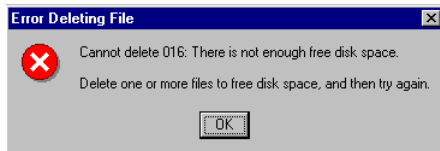
Human-Computer Interaction: Not Just Common Sense Information (3)



ClearCase, a source-code control system from Rational Software



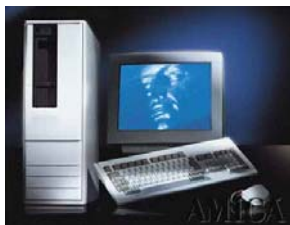
Uhhh... I give up on this one [Mac shareware version of RISK]



Windows 95

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Human-Computer Interaction (HCI) Deals With The Interaction Of A Person With A Computer



Technological perspective



Human perspective

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Human Perspective



- **People are vastly different from computers**
 - (Gee no kidding!)
- **Some differences between people and computers (from “*Things that make us Smart*” by Don Norman)**

View	People are	Machines are
Machine centered view	(Weaknesses of people) <ul style="list-style-type: none">• Vague, disorganized, distractible, emotional, illogical	(Strengths of machines) <ul style="list-style-type: none">• Precise, orderly, cannot be distracted, unemotional, logical
People centered view	(Strengths of people) <ul style="list-style-type: none">• Creative, compliant, attentive to change, resourceful, able to make flexible decisions based on context	(Weaknesses of machine) <ul style="list-style-type: none">• Dumb, rigid, insensitive to change, unimaginative, constrained to make consistent decisions

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Human Perspective (2)



- **Also differences between different groups of people must also be considered**
 - Physical differences: sensory capabilities, size, shape
 - Psychological differences: language and culture
 - Differences in skills and experience
 - Usage differences: different people may complete the same task in vastly different ways

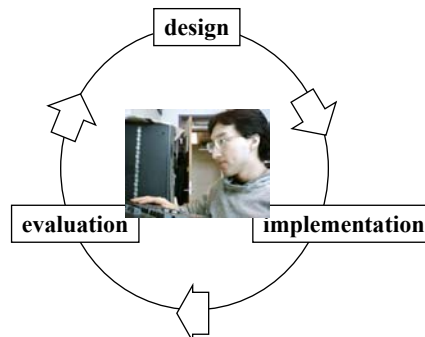
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Human-Computer Interaction

A discipline concerned with the:

**design,
implementation and
evaluation**

...of interactive computing systems for human use

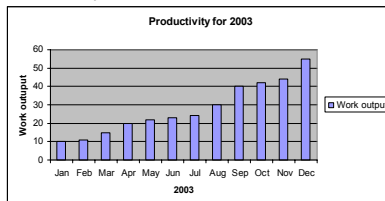


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HCI Is Concerned With The Usability Of A System

Some measures of usability:

- Effectiveness
 - Does the system let the person do what they need to do?
 - Does it support the user's goals and tasks?
- Efficiency



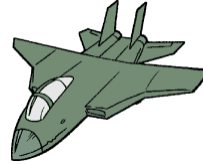
- Satisfaction



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How Usability Can Vary In Different Domains

Life critical systems

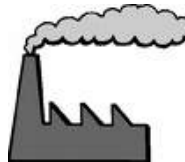
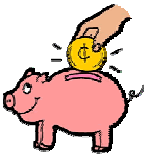


- Areas of emphasis:
 - Typically user training is extensive
 - Effectiveness and reliability are crucial
- Area of lesser emphasis
 - Subjective satisfaction with the system

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How Usability Can Vary In Different Domains (2)

Industrial and commercial uses



- Areas of emphasis:
 - Decisions are often based on costs
 - Training time can be expensive so ease of use and learning is important.
 - Since many businesses are international scalability and the ability to adapt the system to local cultures is important.
 - Speed (efficiency) is important but must be balanced against issues such as fatigue, stress and burnout.
- Area of lesser emphasis
 - Subjective satisfaction with the system

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How Usability Can Vary In Different Domains (3)

Office, home and entertainment applications



- Areas of emphasis:
 - Often there's a wide selection of software to choose from (competitive)
 - Ease learning and use and subjective satisfaction are important
 - Choosing the right set of functions is difficult but important
 - Decisions are also cost driven

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The Historical Context Of Usability: **Apply It Like Peanut Butter.**



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The Historical Context Of Usability:
The Priest With A Parachute Paradigm.



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The Historical Context Of Usability:
HCI People Are The UI Police.

Programmers hide your code!



Terminator 2 © Artisan Entertainment

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The Historical Context Of Usability: It's Important

Software should be **friendly** and **usable** but how do we create it?



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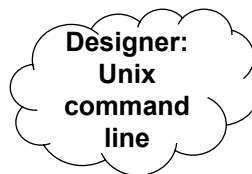
Why An Interface Design Process? Why HCI?

63% of large software projects go over cost

- Managers gave four usability-related reasons
 - Users requested changes
 - Overlooked tasks
 - Users did not understand their own requirements
 - Insufficient user-developer communication and understanding

Usability engineering

- Pay a little now, or pay a lot later!
- Far too easy to jump into detailed design that is:
 - Founded on incorrect requirements
 - Has inappropriate dialogue flow
 - Is not easily used
 - Is never tested until it is too late



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Importance Of Human-Computer Interaction: Cost Of Using A Computer

Costs from a technical perspective

- Hardware costs
- Software costs

Costs from the user's perspective (personware)

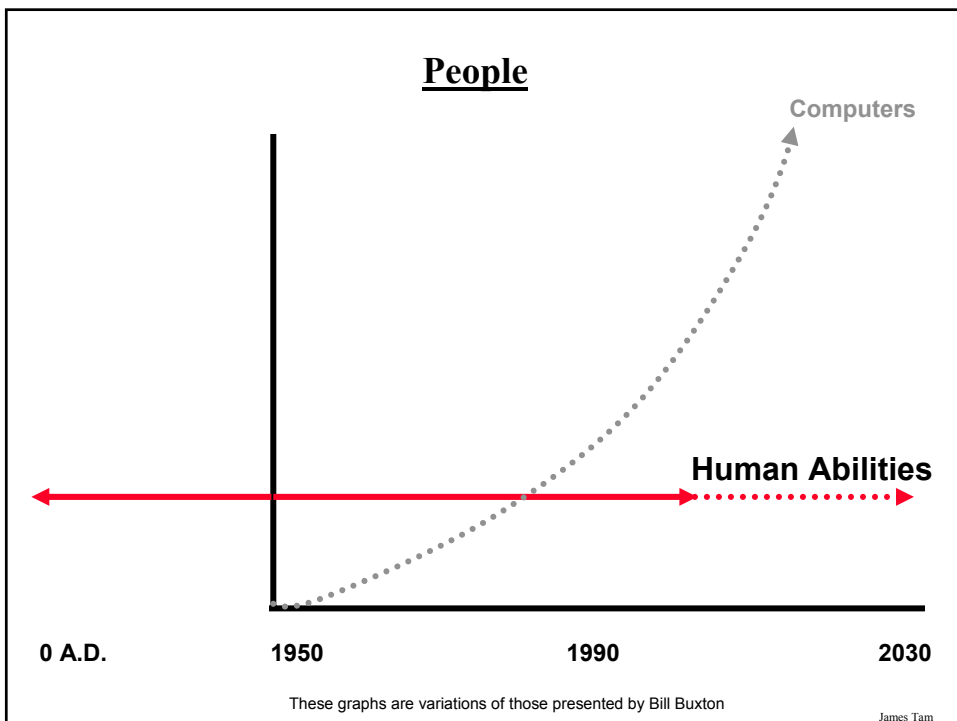
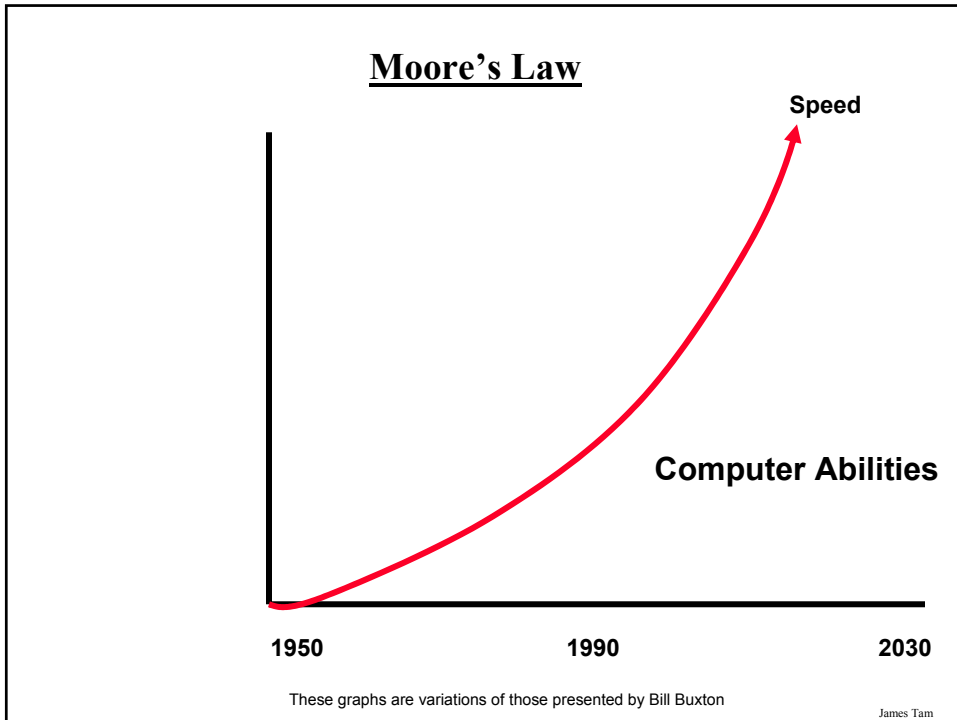
- Training costs
- Daily usage

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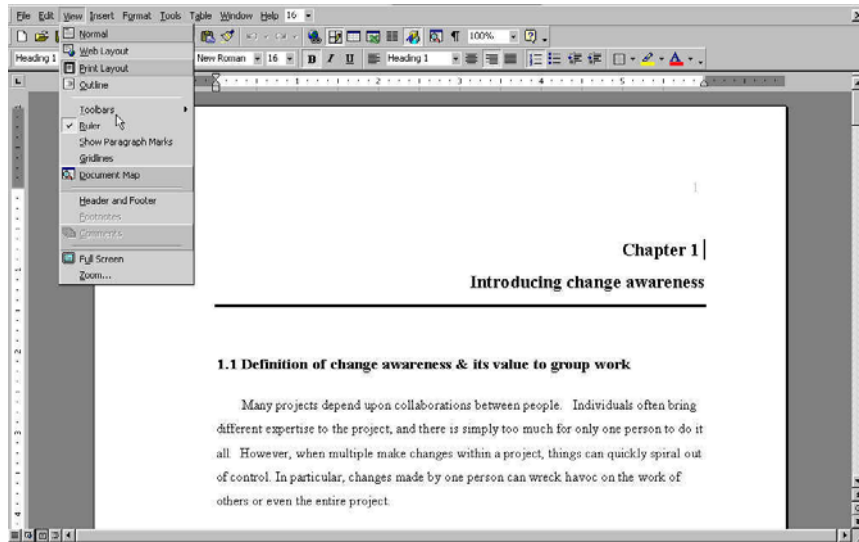
Another Motivation For Human-Computer Interaction

When there is a computer-human interaction most often the bottleneck slowing down the process is the person and not the computer.

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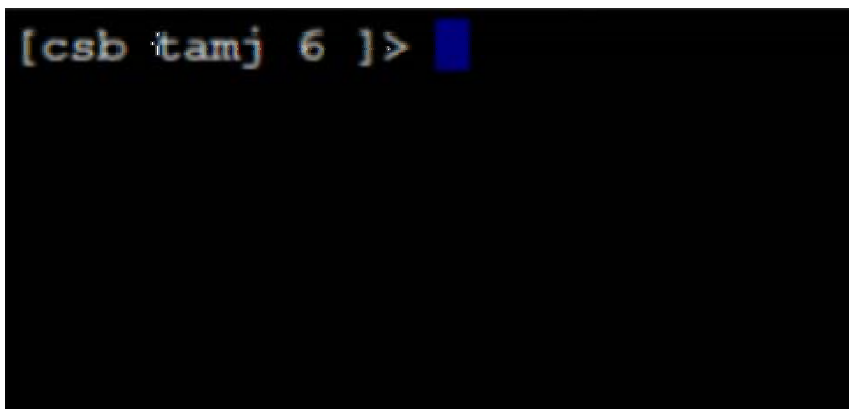


HCI.. Not Just Graphical Interfaces For Novice Users



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HCI.. Not Just Graphical Interfaces For Novice Users: A Good Interface? (2)



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Objectives

At the end of this course, you will

- Know what is meant by good design (guidelines and models that can be applied to interface design)
- Know and have applied a variety of methods for involving the user in the design process
- Have experienced building applications through various methods and systems
- Know and have applied methods to evaluate interface quality
- Have sufficient background to
 - Apply your training in industry
 - Continue your education

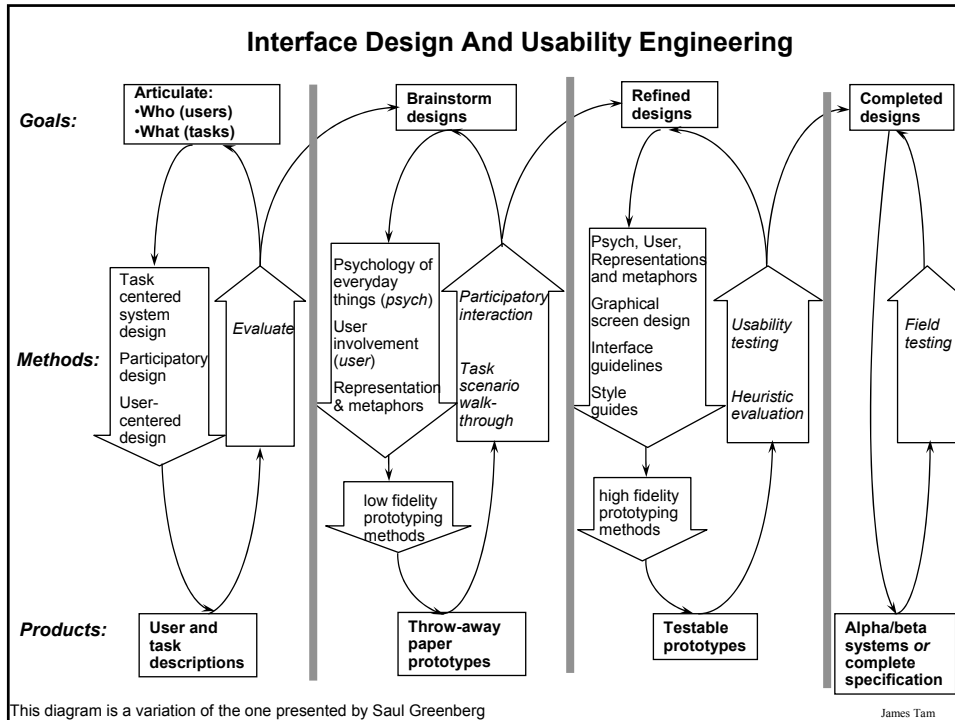


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What 481 Is Not About

- **The theory and mechanics of GUI programming**
 - The focus is on learning how to design a usable system rather than learning about how a GUI works.
- **How to programming with a GUI language e.g., C# programming**

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How You Will Be Evaluated

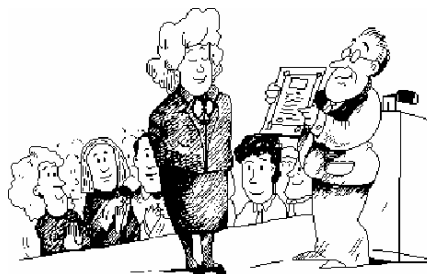
1) Assignments (50%)

- Portfolio:
 - Assignment 1 (*TA marks it*): Task centered design and prototyping (13%)
 - Assignment 3 (*I mark it*): System redesign, implementation, and evaluation (25%)
- Usability study:
 - Assignment 2 (*TA marks it*): Usability evaluation of a large system in everyday use (12%)

2) Exams (50%)

- Mid-term (20%)
- Final (30%)

Note: you must pass the exam and the assignment components to get a C- or higher in the course



Group Work



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Tutorials

Critical to your success in assignments

- Elaboration of assignment specifications
- Discuss intermediate results
- Feedback on graded assignments
- Learn specific skills



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Textbooks And Additional References

Lecture notes (required)

- Sold at cost by the Copy Center
- Also available on the web
(<http://www.cpsc.ucalgary.ca/~tamj/481/>)



Text books (optional)

- Interaction Design: Beyond Human-Computer Interaction by Sharp, Preece and Rogers.
- Readings in Human Computer Interaction: Towards the Year 2000 (2nd Edition) by Baecker, Grudin, Buxton and Greenberg
- You can also choose whatever programming manual that you like best

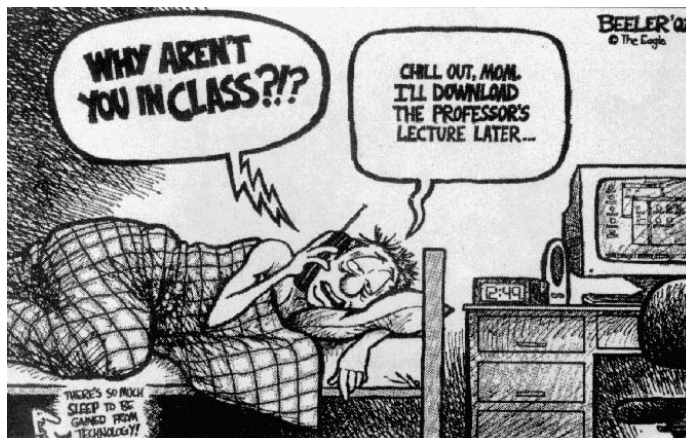
Extra readings

- Some will be required (could be on the exam), some are optional (not specifically on the exam)

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How To Use The Course Resources

- They are provided to support and supplement lectures
- Neither the course notes nor the text books are meant as a substitute for regular attendance to lecture and tutorials



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