Task for next week

- Transform your paper prototypes into a GUI (in Sketch/Photoshop/… – whatever you like!)
- Send your designs to hanna.schneider@ifi.lmu.de until **Tuesday, July 12, 23:59pm**!

Next week:
Present + give feedback to others

5 Ways to speed up your UI Design Kit

http://www.creativebloq.com/ux/5-ways-speed-your-design-ui-kits-11618753http://ui-patterns.com/

SS2016

UI Cheat Sheet

- **UI Patterns**: ui-patterns.com/
- **pttrns**: http://pttrns.com/
- **pixelkit**: http://pixelkit.com
- **iOS Human Interface guidelines:** https://developer.apple.com/ios/human-interface-guidelines/
- **UXPin kit download:** https://www.uxpin.com/ui-kit-download.html
- **ui8:** https://ui8.net/
- **Pixelbuddha**: https://pixelbuddha.net/
- **Teehanlax** http://teehanlax.com/tools/iphone/ - danke an Ferdinand!

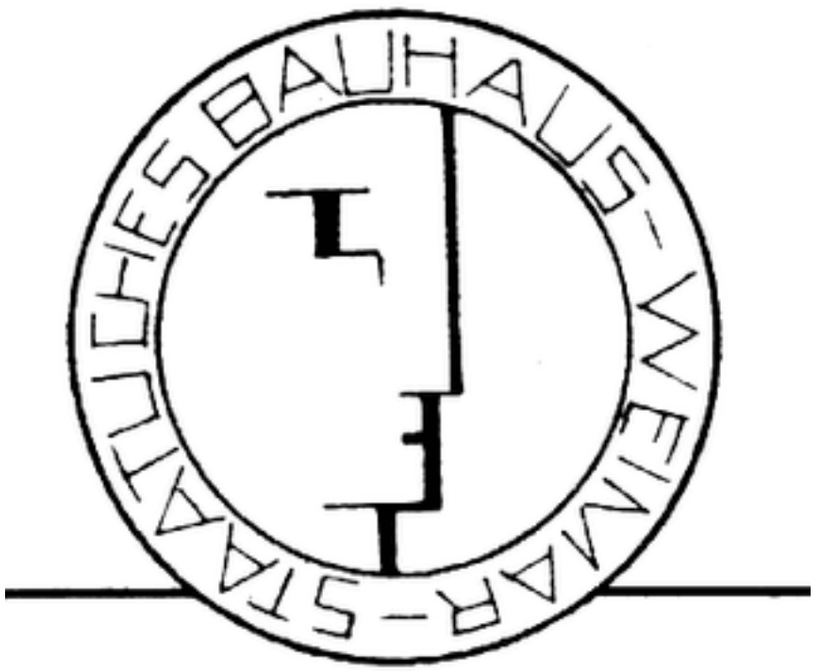

AT&T LTE
12:03 PM
70%
UBER
PICKUP LOCATION
817-821 Lexington Avenue
SET PICKUP LOCATION
2 MIN
E 68th St
68 St - Hunter College
5th Ave
E 67th
LENOX
65th St
E 62nd
E 63r
Lexington Av/63 St
E 60th St
Park Ave
Lexington Av/59 St
59 St


Wir buchen Deine Reise...
Messages
Butler
Details
ich muss Freitagabend von berlin nach München
Flug: 18:00h ab TXL, Ankunft 19:20h für 283€, Bahn: 17:52h ab HBF, Ankunft 23:07h für 82€ - ich kann gerne nach weiteren Alternativen wie Bus/ Mitfahrgelegenheit schauen. Falls Du flexibel bist, auch nach späteren/ früheren/ günstigeren Optionen. Was würdest Du bevorzugen?
der Flug ist perfekt! Bitte buchen. danke
Die Bestätigung ist per Email an Dich unterwegs. Gute Reise!
Wir bestellen Dein Essen...
Messages
Butler
Details
ich möchte eine Pizza Salami und eine Cola light
Wir können Dir eine Pizza Salami und eine Cola light für 9€ in 45min an Deine Wohnadresse liefern lassen. Ok? Cola light 0.33L Dose oder 1L Flasche?
ja, Dose
Ok, Deine Pizza Salami und Cola light Dose sind auf dem Weg zu Dir. Enjoy!
Wir vere
Deinen Ar
Messages
Gerne. Bist Du ges
oder privat versich
Ok, wir haben Dir
Donnerstag um 18:
einen Termin bei
MeinDentist in der
Kollwitzstr. 64 ausg

Exam recap

Interaction design SoSe 2016

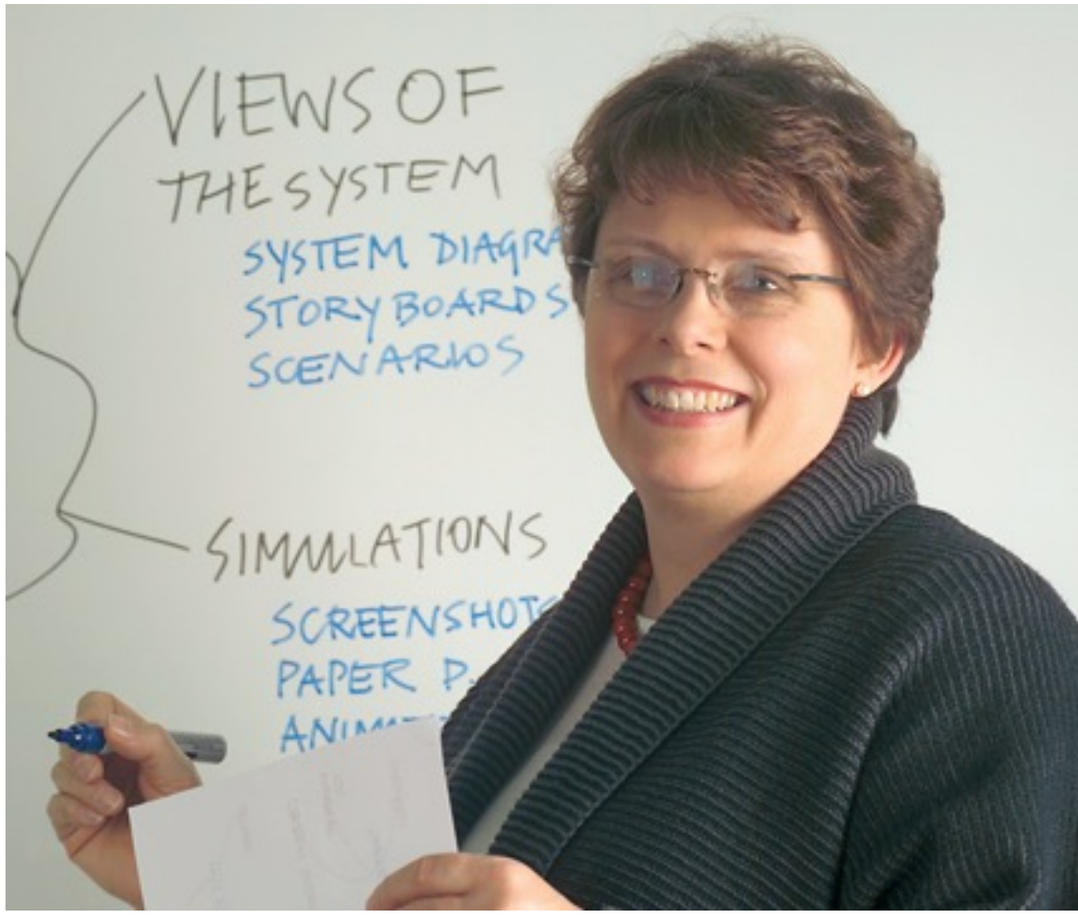
Important people in IxD & inventions



http://www.flickr.com/photos/scoobyfoo/268308263/sizes/l/in/photostream/

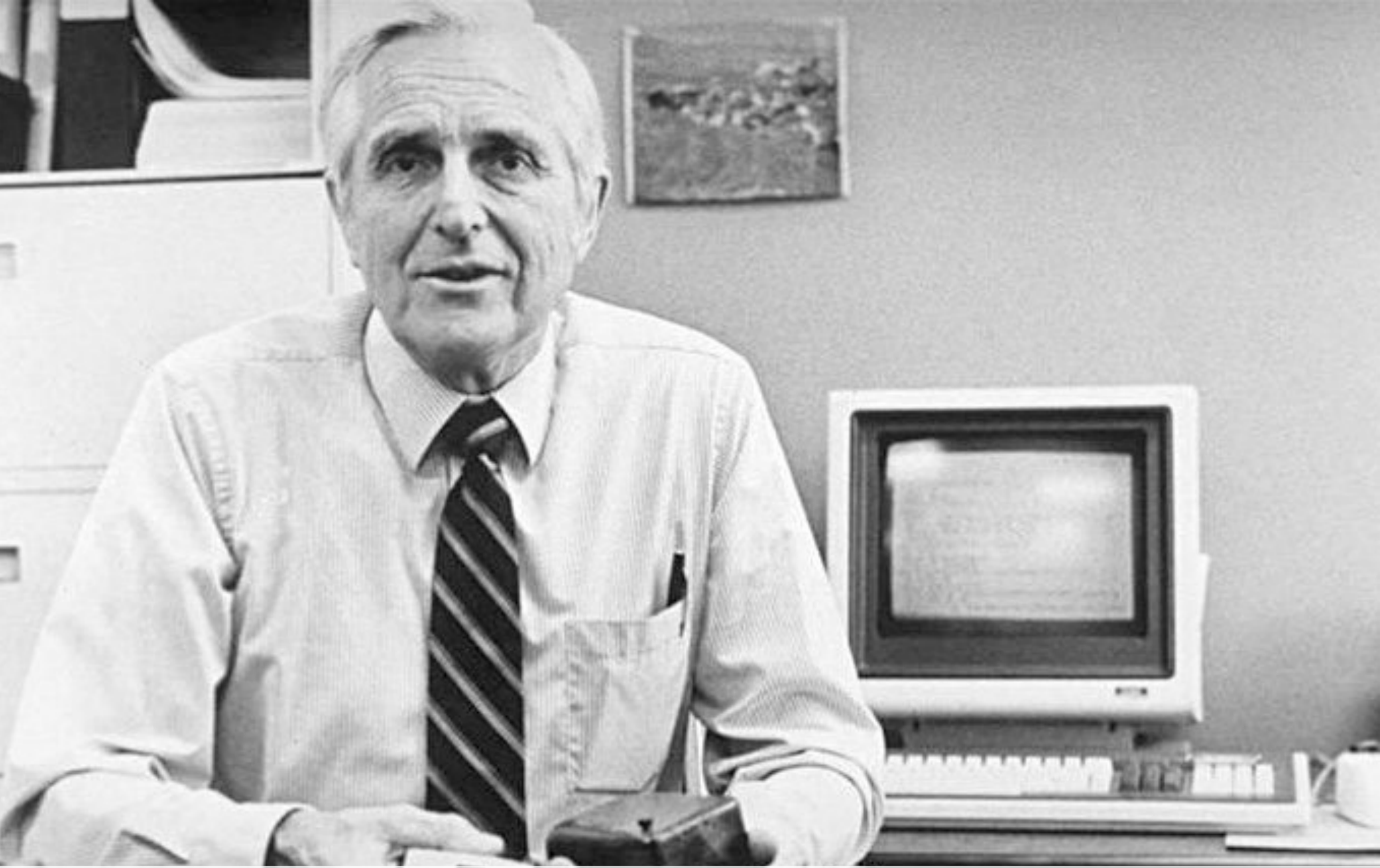
Gillian Crampton Smith

-established the first Interaction Design MA program at the Royal College of Art (RCA)
-was the founder and academic director of the Interaction Design Institute Ivrea (IDII)



source: [3]

http://www.designinginteractions.com/img/interviews/GillianCramptonSmith.jpg



Douglas Engelbart

http://www.corporationtocommunity.com/wp-content/uploads/2011/02/engelbart.jpg

1. Artefacts—physical objects designed to provide for human comfort, the manipulation of things or materials, and the manipulation of symbols.

2. Language—the way in which the individual classifies the picture of his world into the concepts that his mind uses to model that world, and the symbols that he attaches to those concepts and uses in consciously manipulating the concepts ("thinking").

3. Methodology—the methods, procedures, and strategies with which an individual organises his goal-centred (problem-solving) activity.

4. Training—the conditioning needed by the individual to bring his skills in using augmentation means 1, 2, and 3 to the point where they are operationally effective.

The Computer for the 21st Century

Specialized elements of hardware and software, connected by wires, radio waves and infrared, will be so ubiquitous that no one will notice their presence

by Mark Weiser

The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.

Consider writing, perhaps the first information technology. The ability to represent spoken language symbolically for long-term storage freed information from the limits of individual memory. Today this technology is ubiquitous in industrialized countries. Not only do books, magazines and newspapers convey written information, but so do street signs, billboards, shop signs and even graffiti. Candy wrappers are covered in writing. The constant background presence of these products of "literacy technology" does not require active attention, but the information to be transmitted is ready for use at a glance. It is difficult to imagine modern life otherwise.

Silicon-based information technology, in contrast, is far from having become part of the environment. More than 50 million personal computers have been sold, and the computer nonetheless remains largely in a world of its own. It is approachable only through complex jargon that has nothing to do with the tasks for which people use computers. The state of the art is perhaps analogous to the period when scribes had to know as much about making ink or baking clay as they did about writing.

The arcane aura that surrounds personal computers is not just a "user interface" problem. My colleagues and I at the Xerox Palo Alto Research Center think that the idea of a "personal" computer itself is misplaced and that the vision of laptop machines, dynabooks and "knowledge navigators" is only a transitional step toward achieving the real potential of information technology. Such machines cannot truly make computing an integral, invisible part of people's lives. We are therefore trying to conceive a new way of thinking about computers, one that takes into account the human world and allows the computers themselves to vanish into the background.

Such a disappearance is a fundamental consequence not of technology but of human psychology. Whenever people learn something sufficiently well, they cease to be aware of it. When you look at a street sign, for example, you absorb its information without consciously performing the act of reading. Computer scientist, economist and Nobelist Herbert A. Simon calls this phenomenon "compiling"; philosopher Michael Polanyi calls it the "tacit dimension"; psychologist J. J. Gibson calls it "visual invariants"; philosophers Hans Georg Gadamer and Martin Heidegger call it the "horizon" and the "ready-to-hand"; John Seely Brown of PARC calls it the "periphery." All say, in essence, that only when things disappear in this way are we freed to use them without thinking and so to focus beyond them on new goals.

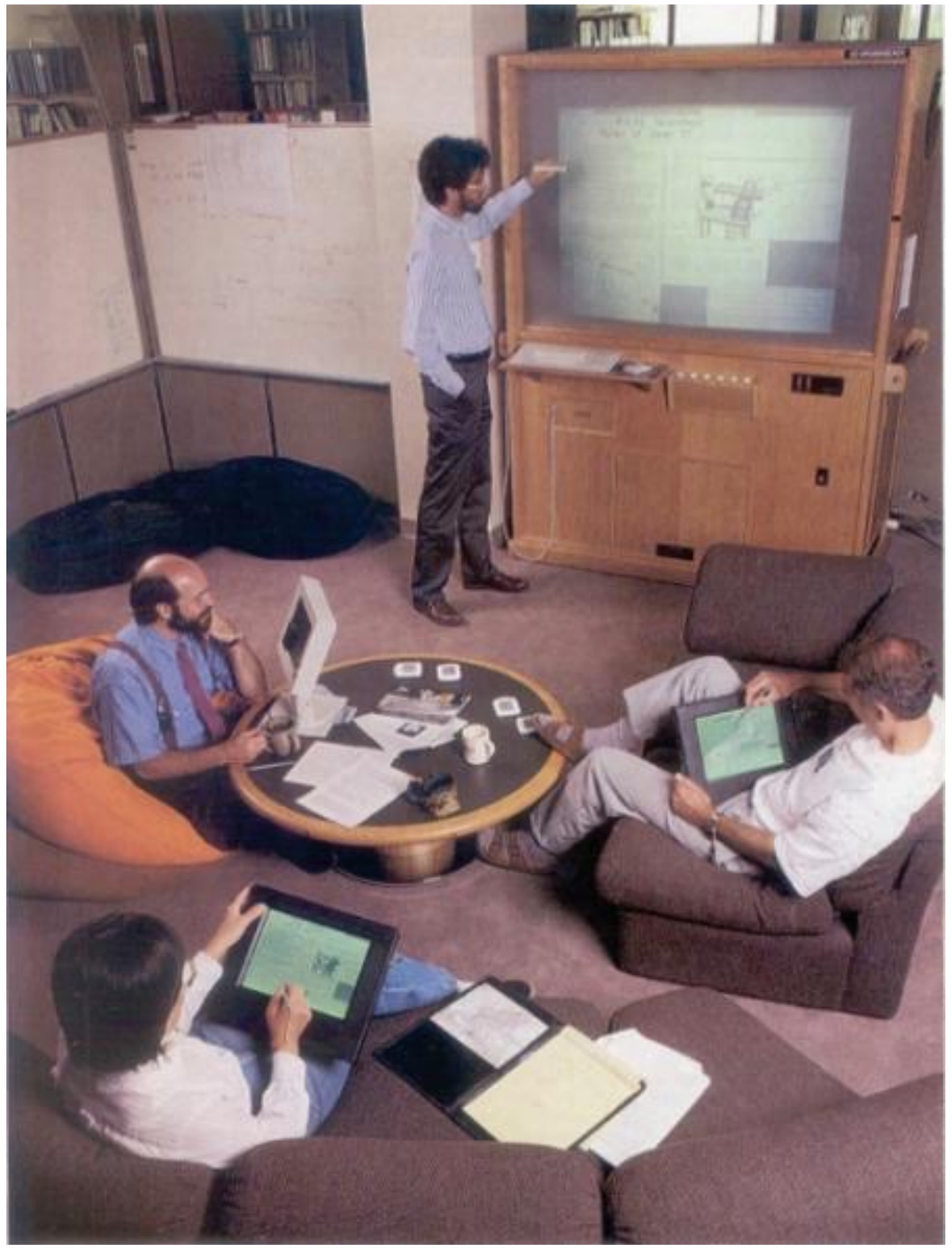
The idea of integrating computers seamlessly into the world at large runs counter to a number of present-day trends. "Ubiquitous computing" in this context does not mean just computers that can be carried to the beach, jungle or airport. Even the most powerful notebook computer, with access to a worldwide information network, still focuses attention on a single box. By analogy with writing, carrying a superlaptop is like owning just one very important book. Customizing this book, even writing millions of other books, does not begin to capture the real power of literacy.

Furthermore, although ubiquitous computers may use sound and video in addition to text and graphics, that does not make them "multimedia computers." Today's multimedia machine makes the computer screen into a demanding focus of attention rather than allowing it to fade into the background.

Perhaps most diametrically opposed to our vision is the notion of virtual reality, which attempts to make a world inside the computer. Users don special goggles that project an artificial scene onto their eyes; they wear gloves or even bodysuits that sense their motions and gestures so that they can move about and manipulate virtual objects. Although it may have its purpose in allowing people to explore realms otherwise inaccessible—the insides of cells, the surfaces of distant planets, the information web of data bases—virtual reality is only a map, not a territory. It excludes desks, offices, other people not wearing goggles and bodysuits, weather, trees, walks, chance encounters and, in general, the infinite richness of the universe. Virtual reality focuses an enormous apparatus on simulating the world rather than on invisibly enhancing the world that already exists.

Indeed, the opposition between the

MARK WEISER is head of the Computer Science Laboratory at the Xerox Palo Alto Research Center. He is working on the next revolution of computing after workstations, variously known as ubiquitous computing or embodied virtuality. Before working at PARC, he was a professor of computer science at the University of Maryland; he received his Ph.D. from the University of Michigan in 1979. Weiser also helped found an electronic publishing company and a video arts company and claims to enjoy computer programming "for the fun of it." His most recent technical work involved the implementation of new theories of automatic computer memory reclamation, known in the field as garbage collection.



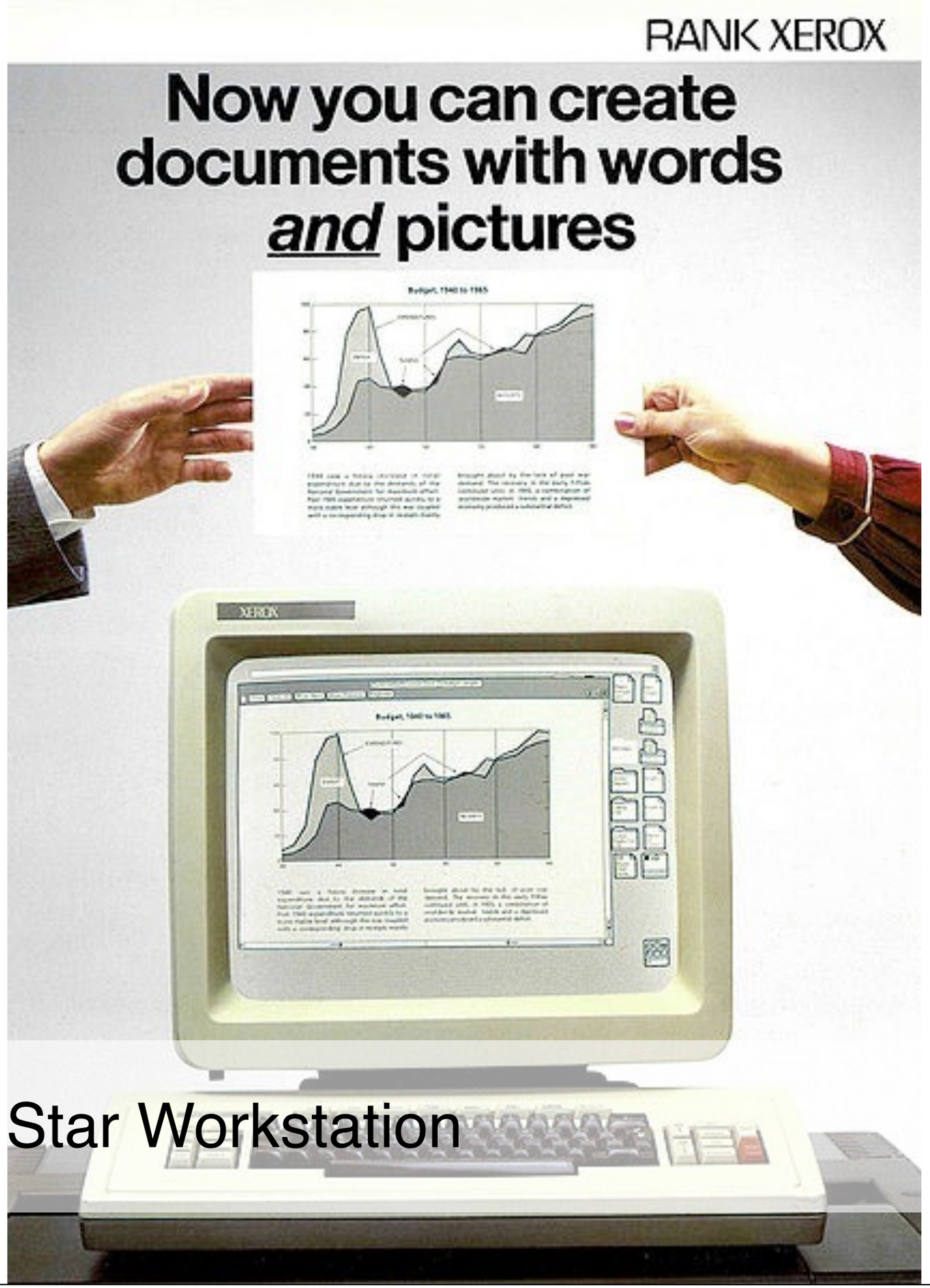
https://www.ics.uci.edu/~corps/phaseii/Weiser-Computer21stCentury-SciAm.pdf

The Computer for the 21st Century, 1991

http://www.pmstudio.co.uk/pmstudio/sites/default/files/images/ubicomp1991.jpg

Marc Weiser

http://www.cs.umd.edu/projects/photohistory/facultypictures_full/weiser.jpg



1981 Xerox Star Workstation

File Edit View Special

Mac System Software

3 items 227K in disk 173K available

System Folder

Empty Folder

SysVersion

Mac System Softwa

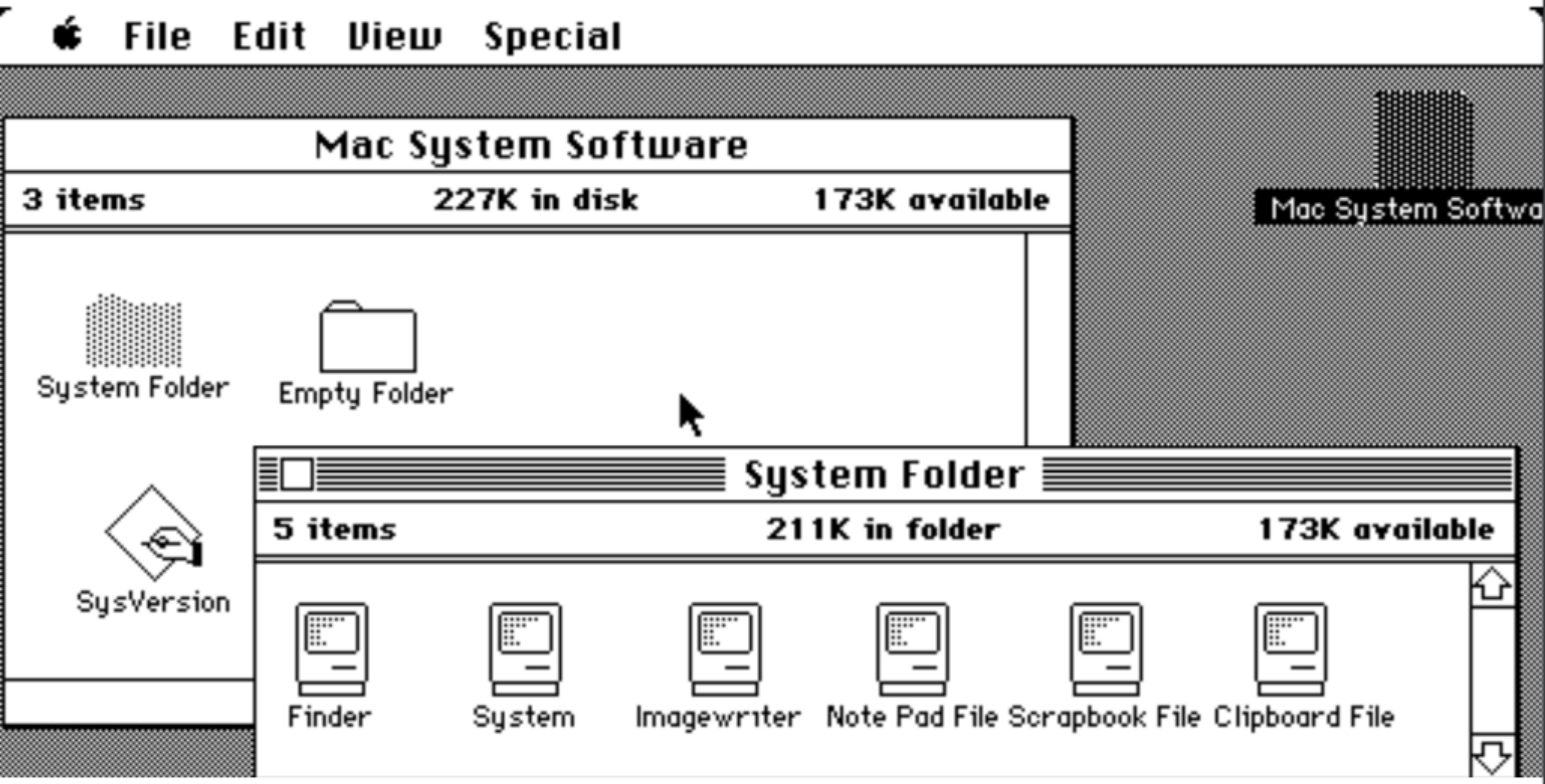
System Folder

5 items 211K in folder 173K available

Finder System Imagewriter Note Pad File Scrapbook File Clipboard File

WIMP

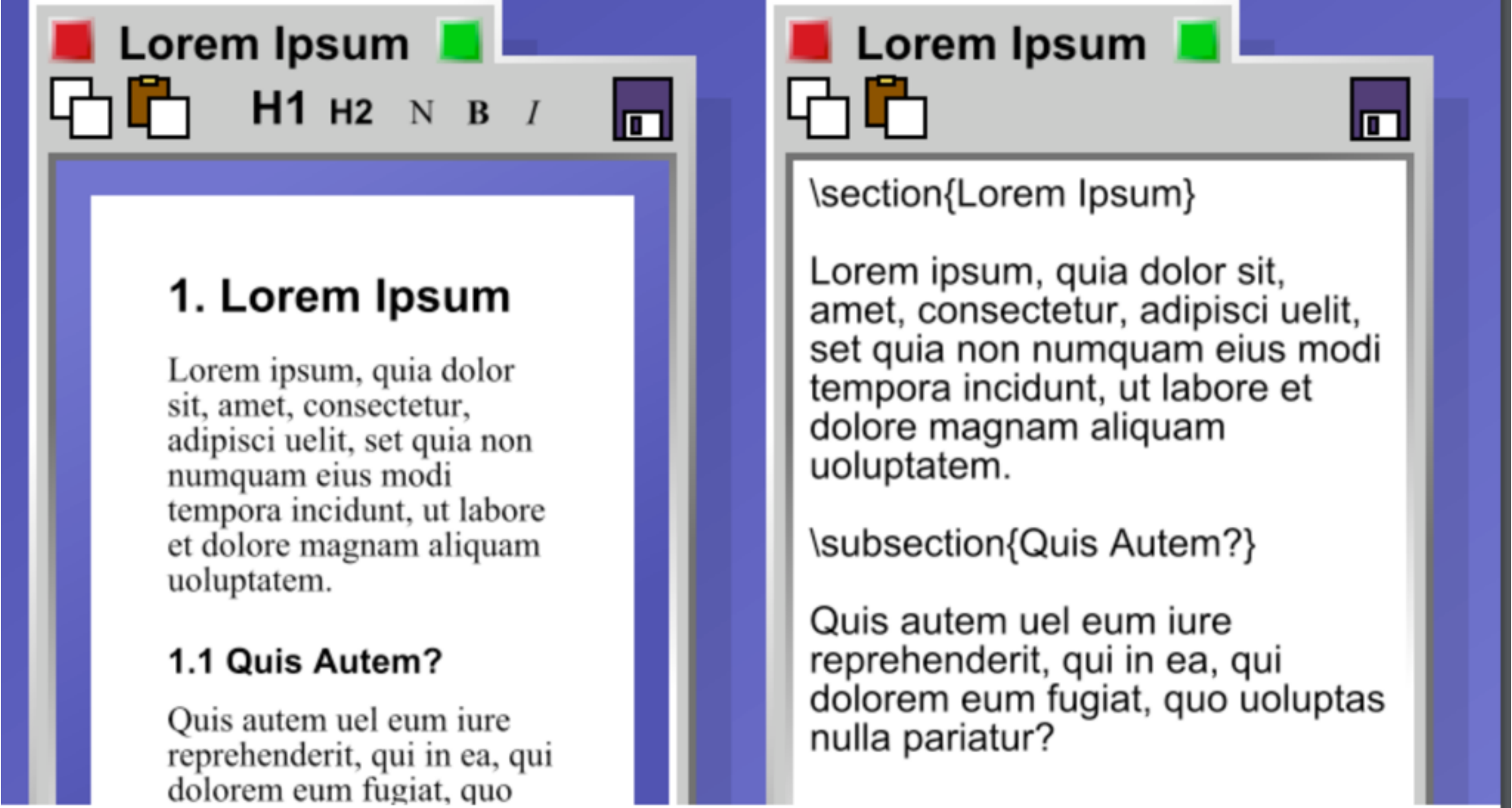
http://media.arstechnica.com/images/gui/11-Mac1.gif



WIMP

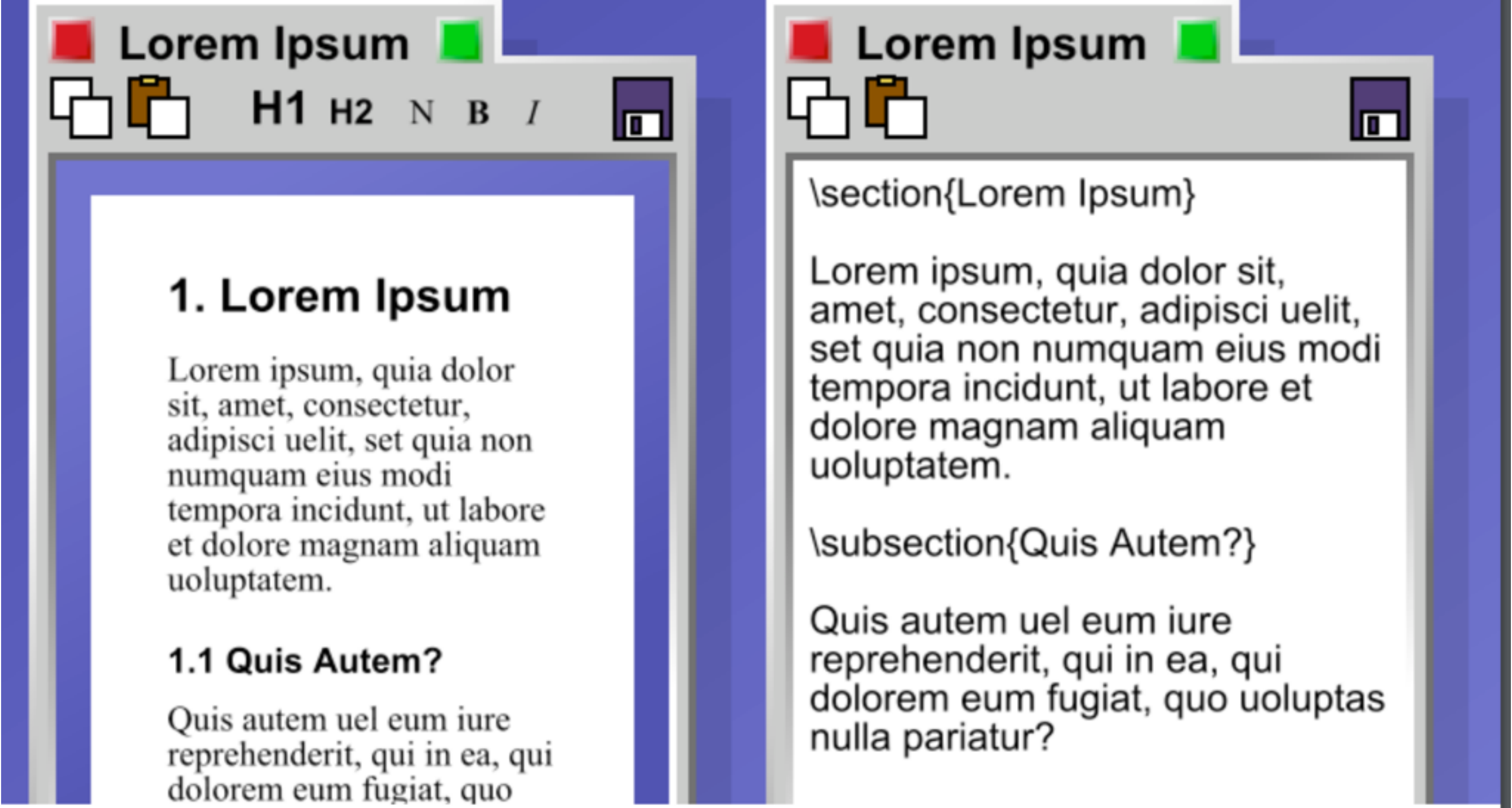
-stands for "window, icon, menu, pointing device"
-coined by Merzouga Wilberts in 1980
-is often incorrectly used as an approximate synonym of "GUI".

http://media.arstechnica.com/images/gui/11-Mac1.gif



WYSIWYG

http://en.wikipedia.org/wiki/File:Lorem_Ipsum_-_WYSIWYG_en_Latex_-_tekst_als_paden.svg



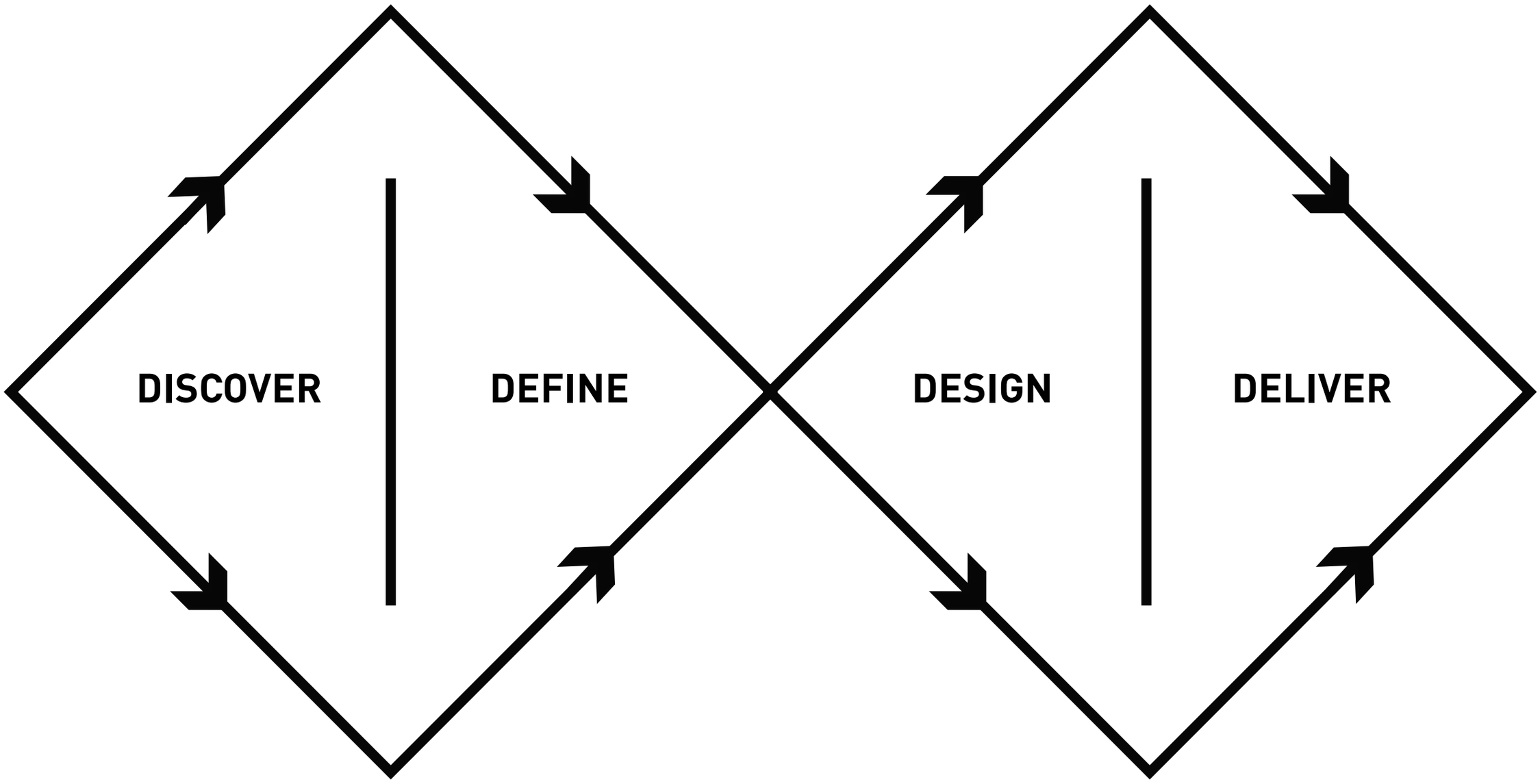
WYSIWYG

-user interface that allows the user to view something very similar to the end result
-implies the ability to directly manipulate the layout of a document/presentation/3D model without having to type or remember names of layout commands.

http://en.wikipedia.org/wiki/File:Lorem_Ipsum_-_WYSIWYG_en_Latex_-_tekst_als_paden.svg

Design process models

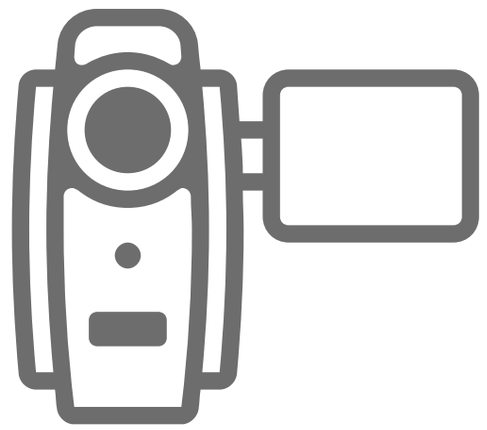
Double Diamond



source: [2]

Four basic activities

- Identifying needs and establishing requirements
- Developing alternative designs
- Building interactive versions of the designs
- Evaluating designs



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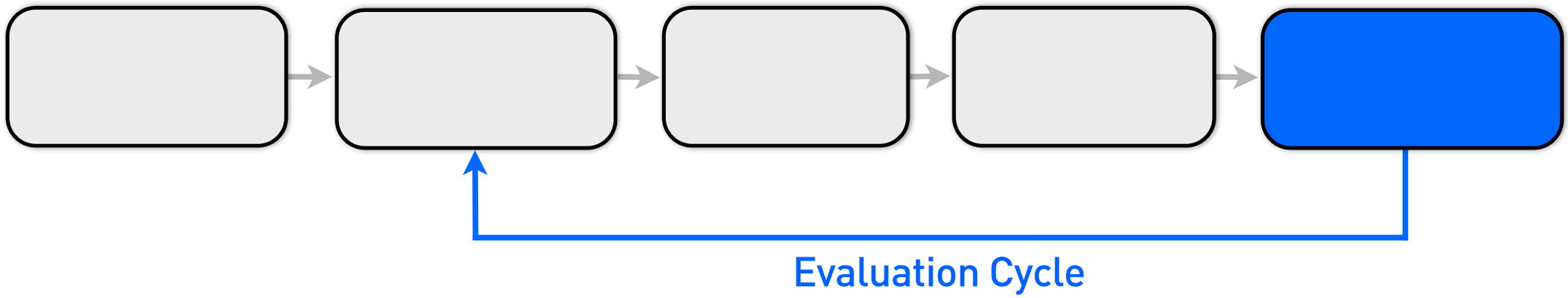
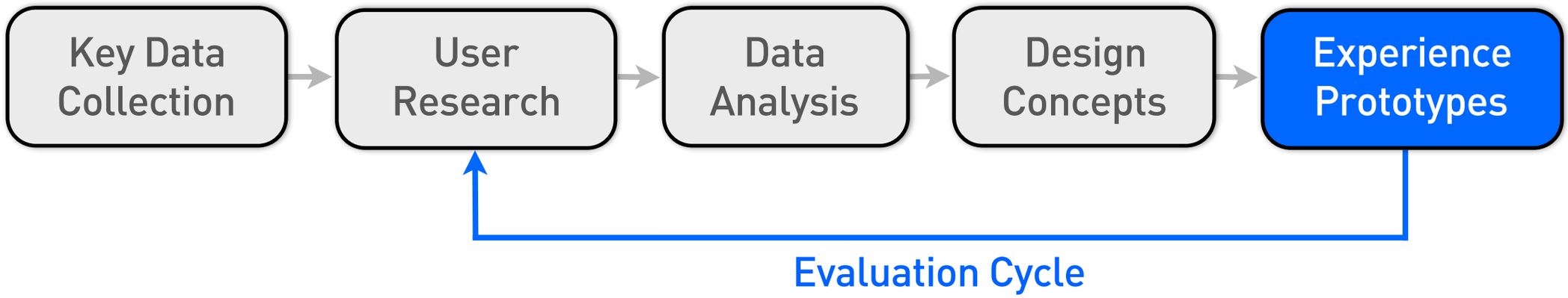
UCD Design Process Model



source: [4]

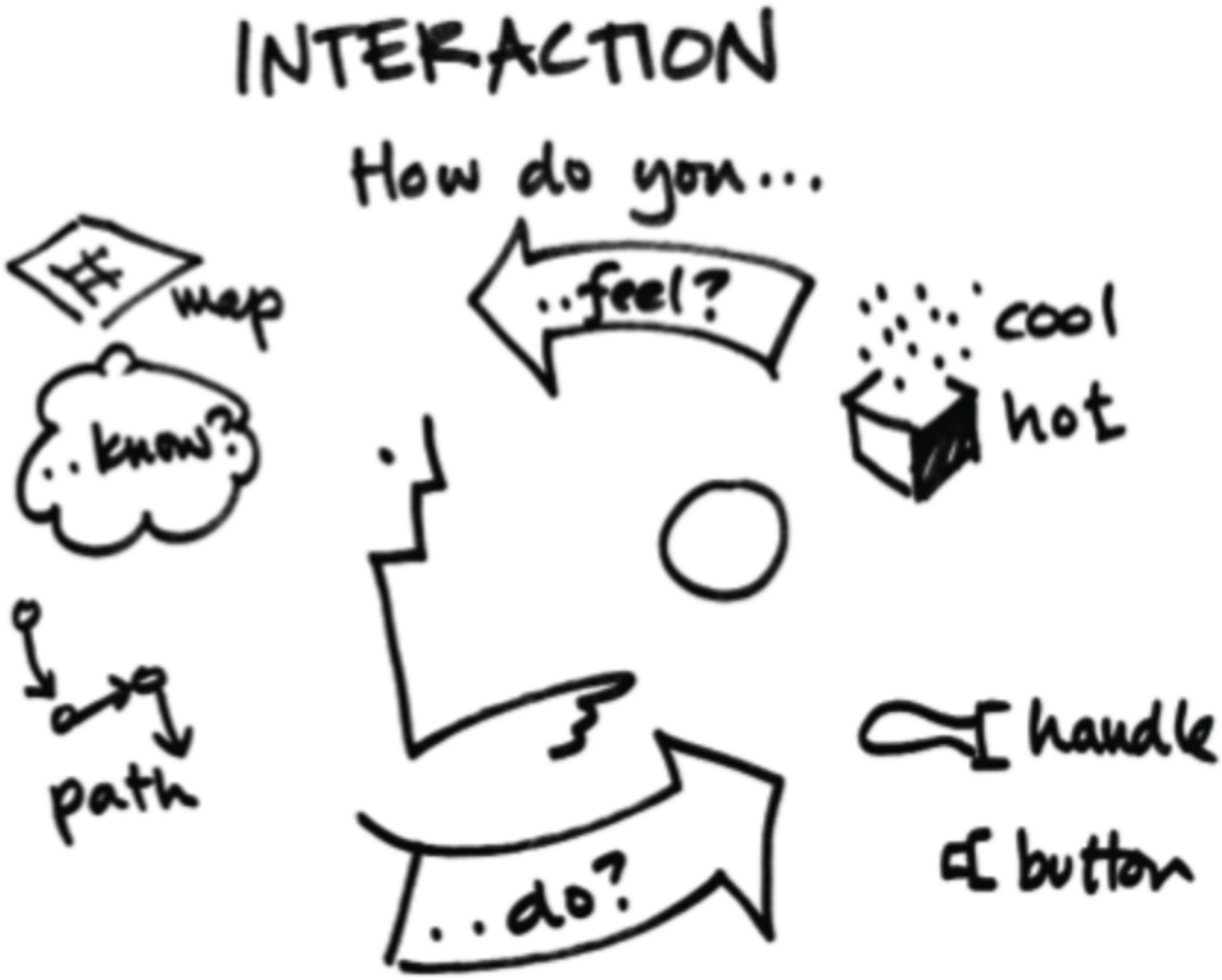
UCD Design Process Model



source: [4]

Bill Verplank

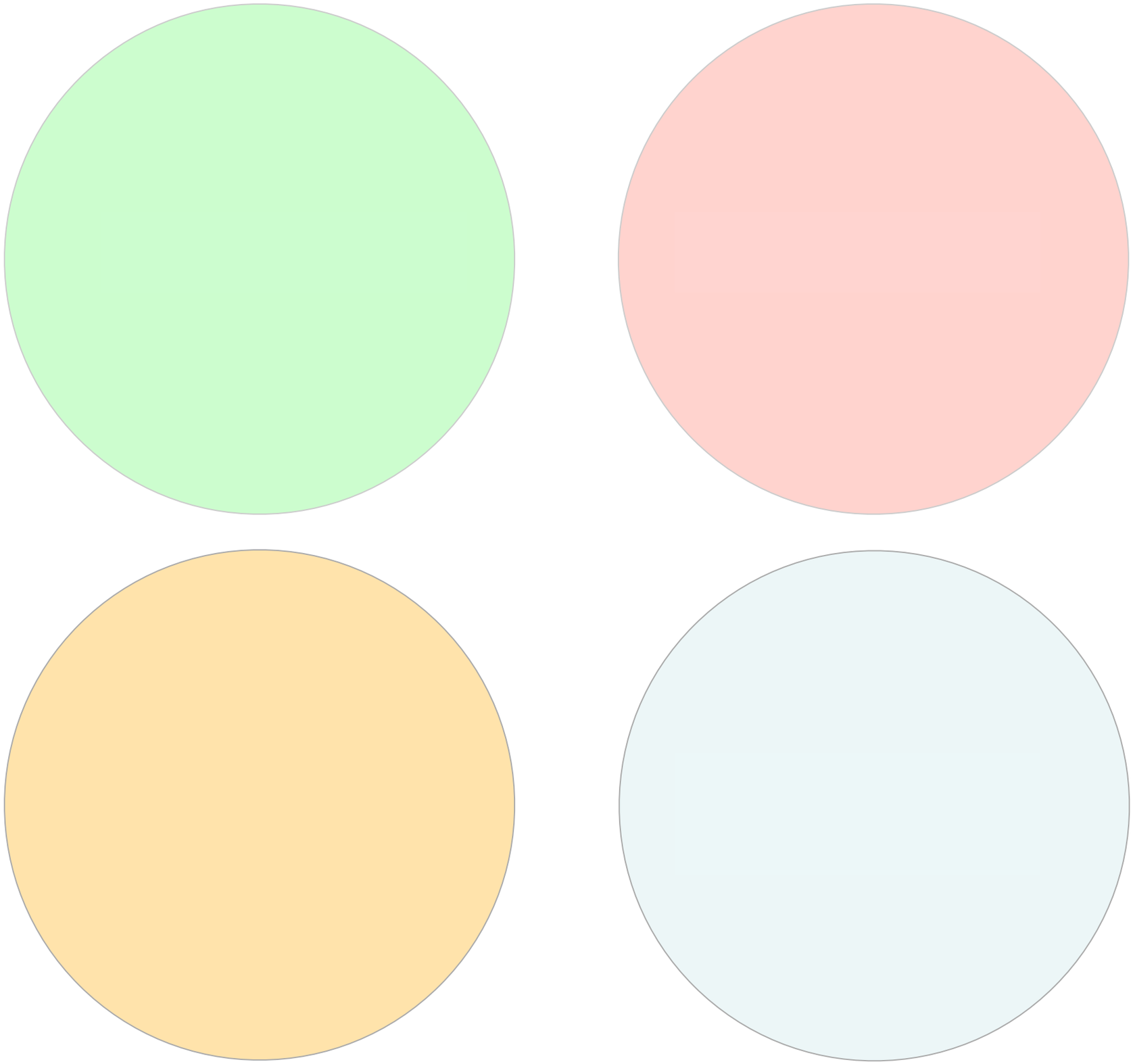
http://rpmedia.ask.com/ts?u=/wikipedia/commons/thumb/9/9b/Billverplank_ciid_2010.jpg/180px-Billverplank_ciid_2010.jpg



Bill Verplank
says that the interaction designer has three questions to answer; they are all “How do you . . . ?” questions.

source: [3]

4 approaches to IxD



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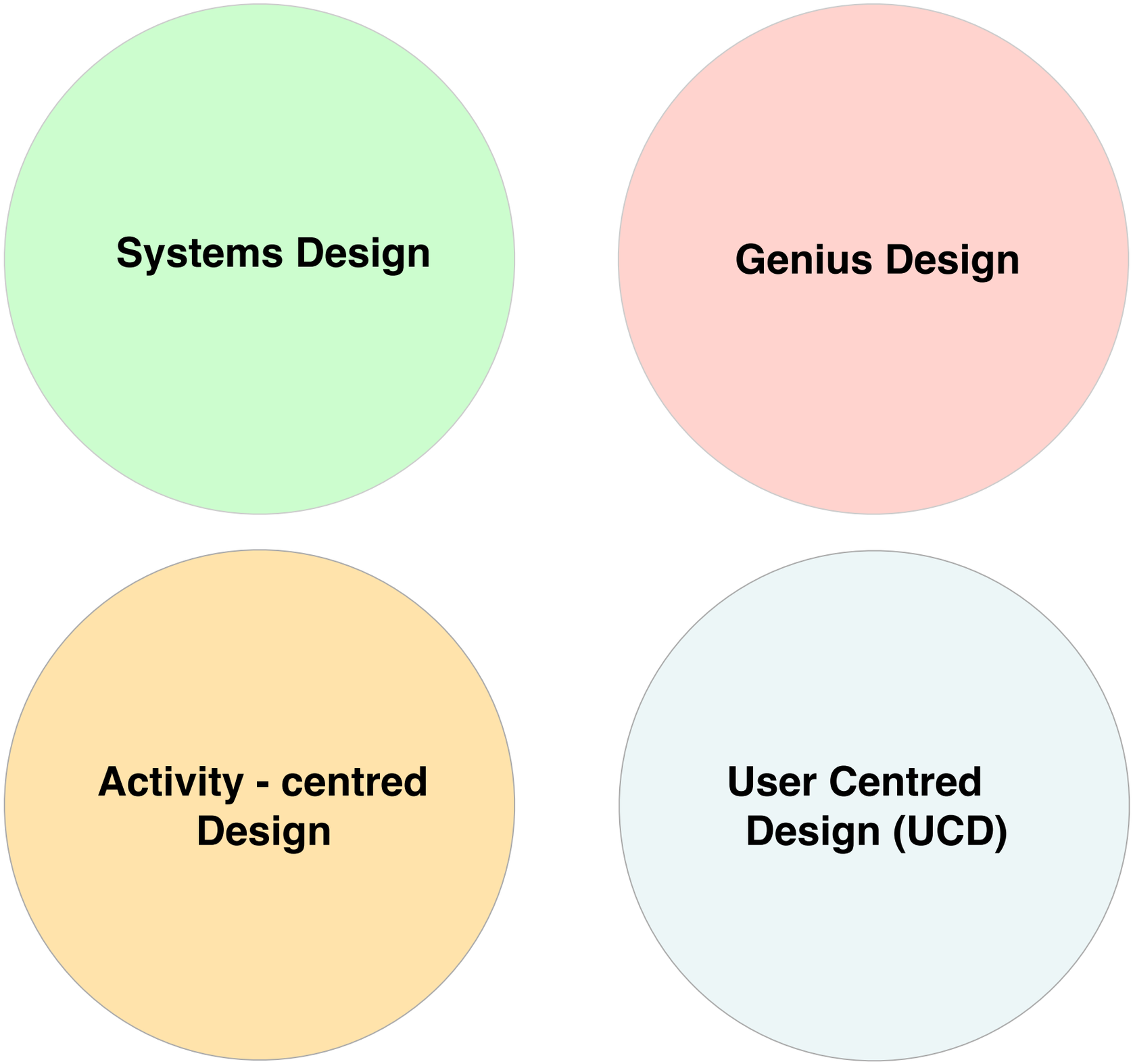

Systems Design
Genius Design
Activity - centred Design
User Centred Design (UCD)

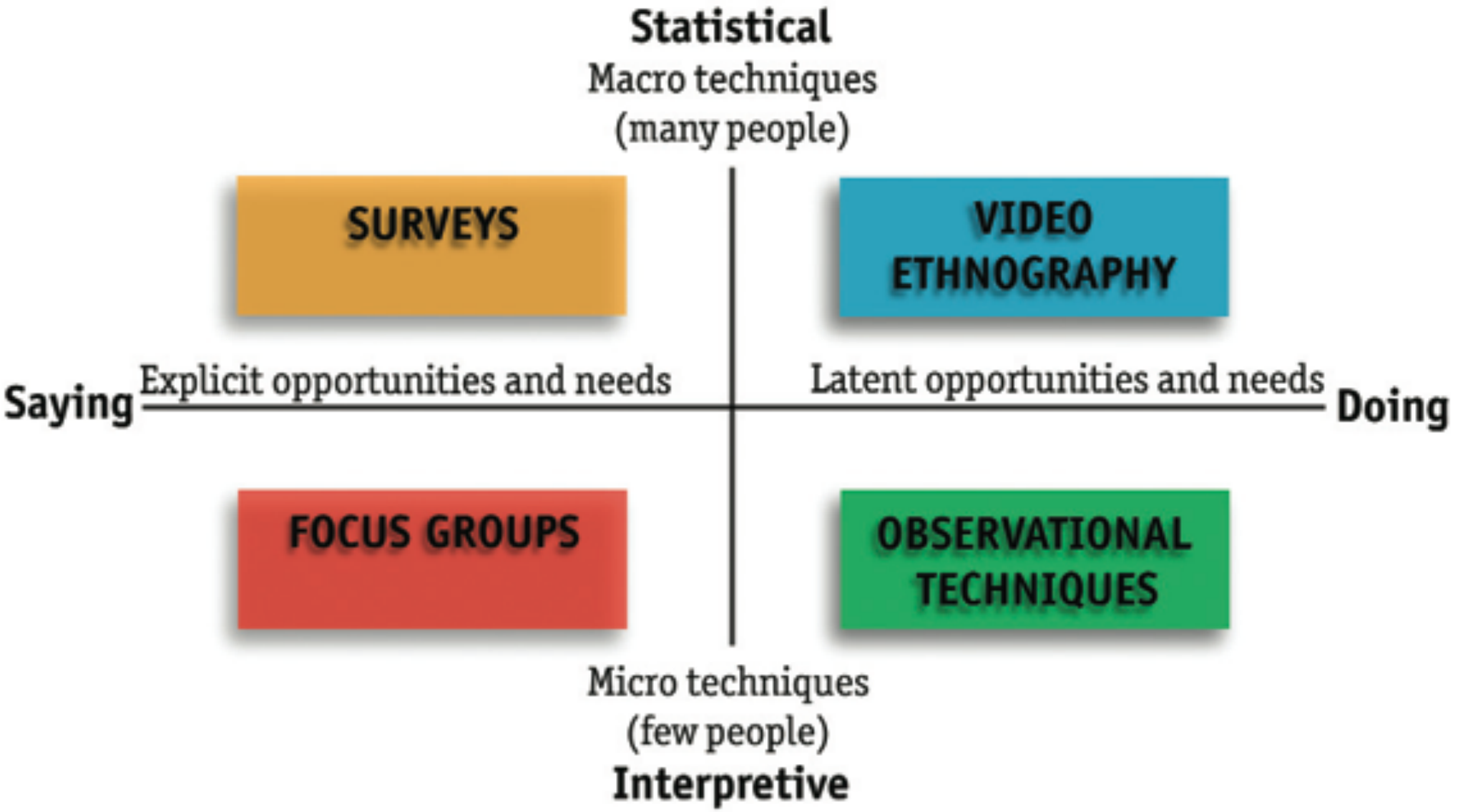
source: [5]

Four Approaches to Design

Approach	*Overview*	*Users*	*Designer*
User-Centered Design	Focuses on user needs and goals	Guide the design	Translates user needs and goals
Activity-Centered Design	Focuses on the tasks and activities that need to be accomplished	Perform the activities	Creates tools for actions
Systems Design	Focuses on the components of a system	Set the goals of the system	Makes sure all the parts of the system are in place
Genius Design	Relies on the skill and wisdom of designers used to make products	Source of validation	Is the source of inspiration

source: [5]

Design Research


Statistical
Macro techniques
(many people)
SURVEYS
VIDEO ETHNOGRAPHY
Saying
Explicit opportunities and needs
Latent opportunities and needs
Doing
FOCUS GROUPS
OBSERVATIONAL TECHNIQUES
Micro techniques
(few people)
Interpretive

source: [8]

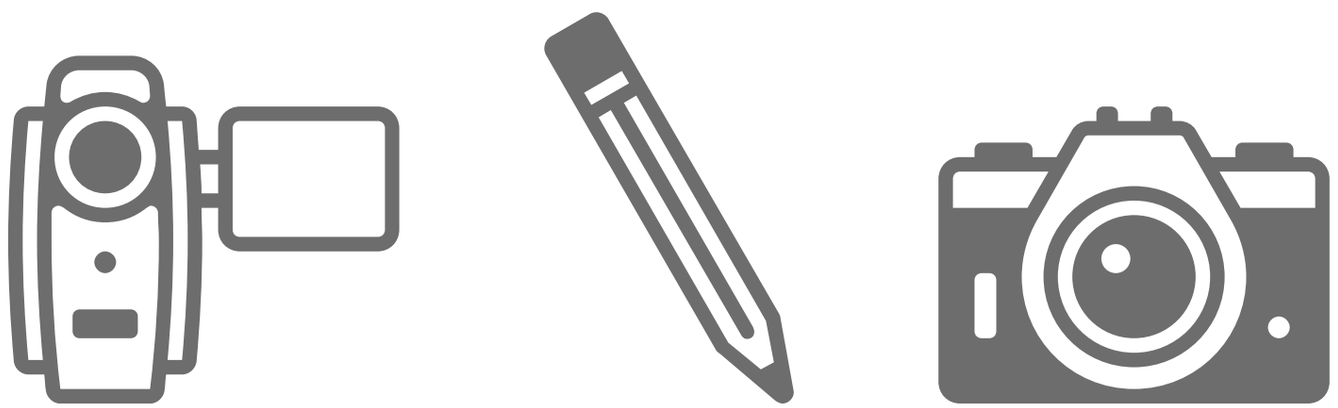
Four key issues

- **Setting goals**
  - Decide how to analyse data once collected
- **Relationship with participants**
  - Clear and professional
  - Informed consent when appropriate
- **Triangulation**
  - Use more than one approach
- **Pilot studies**
  - Small trial of main study

source: [2]

Summary

- Three main data gathering methods: interviews, questionnaires, observation
- Four key issues of data gathering: goals, triangulation, participant relationship, pilot
- Interviews may be structured, semi-structured or unstructured
- Observation may be direct or indirect, in the field or in controlled setting
- Techniques can be combined depending on study focus, participants, nature of technique and available resources



source: [8]

Interviews

Unstructured - are not directed by a script. Rich but not replicable.

Structured - are tightly scripted, often like a questionnaire. Replicable but may lack richness.

Semi-structured - guided by a script but interesting issues can be explored in more depth. Can provide a good balance between richness and replicability.

source: [8]

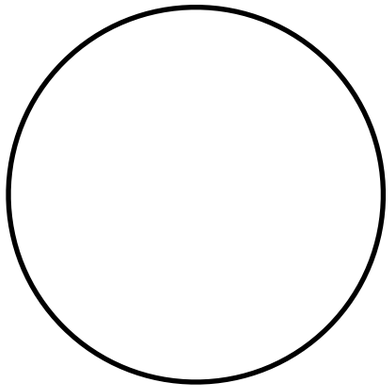
Prototyping UX

80/20 rule

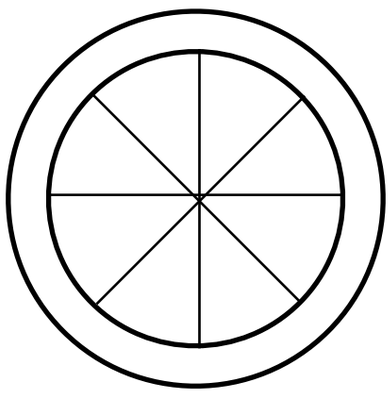
http://www.swissknifeshop.com/media/catalog/product/cache/1/image/5e06319eda06f020e43594a9c230972d/v/m/vm_53831--91_sol_front_ax1000.jpg

source: [7]

Fidelity v. Resolution



low resolution
low fidelity



high resolution
low fidelity

high resolution
high fidelity

source: [5]

Low Fidelity

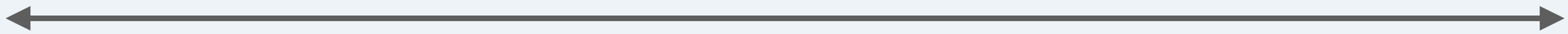
High Fidelity

Open Discussion	Sharp Opinions
Prompting Required	Self Explanatory
Quick and Dirty	Deliberate and Refined
Early Validation	Concrete Ideas

source: [5]

Low Resolution

High Resolution



Less Details	**More Details**
Focus on core interactions	**Focus on the whole**
Quick and Dirty	Deliberate and Refined
Early Validation	Concrete Ideas

source: [5]

Paper-prototyping

Video-prototyping

http://2.bp.blogspot.com/-CBtuuif7rZ4/U0MBJkCUfgI/AAAAAAAAEi4/fYp1bJOcdVY/s1600/Canon+XF205+left+side+view.jpg

Acting out the Scenario

Quick Kiosk Mock-up

Sketching with Hardware

Laws of IxD

about computers:

about human motor skills:

about human cognition:

about computers:

Moore’s law

Buxton’s law

about human motor skills:

about human cognition:

about computers:

Moore’s law

Buxton’s law

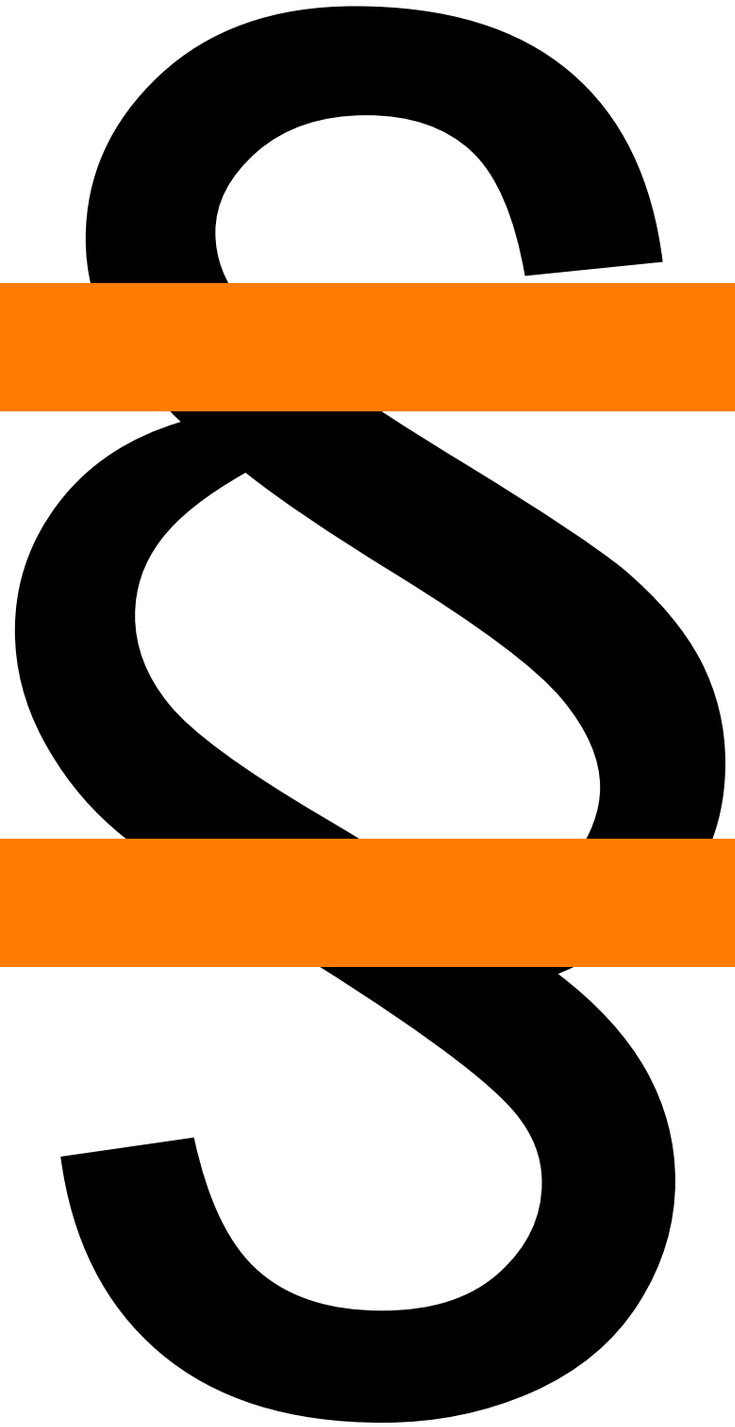
about human motor skills:

Fitts’ law

Steering law

Guiard’s Kinematic chain model

about human cognition:



about computers:

Moore’s law

Buxton’s law

about human motor skills:

Fitts’ law

Steering law

Guiard’s Kinematic chain model

about human cognition:

Hick’s law

Law of practice

Murphy’s law

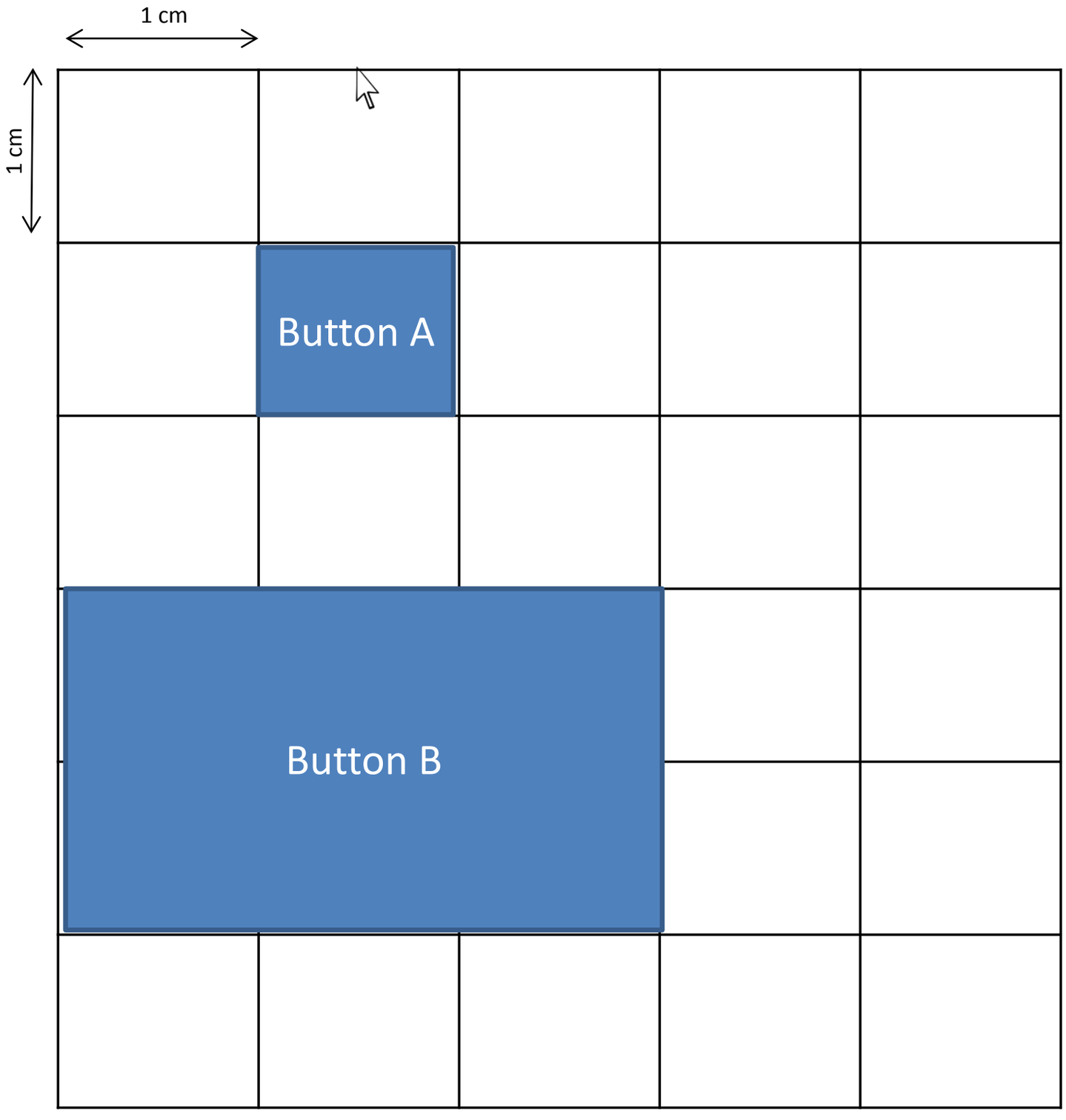
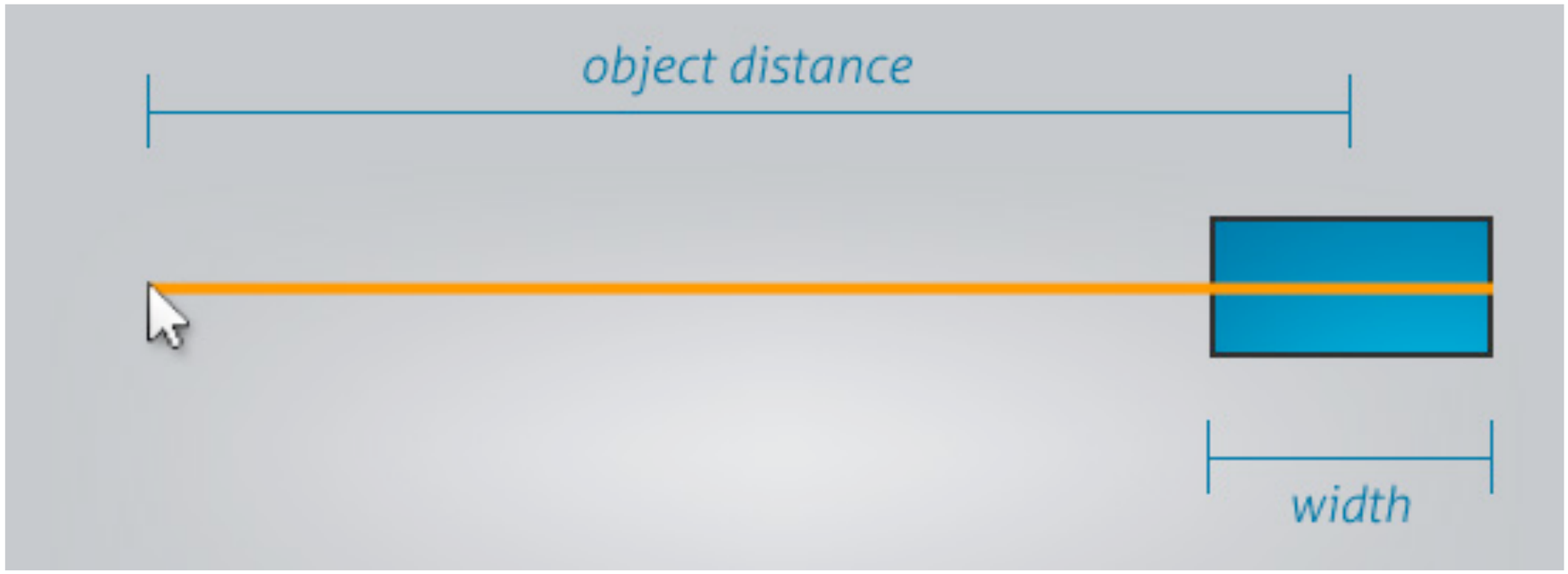

1 cm
1 cm
Button A
Button B

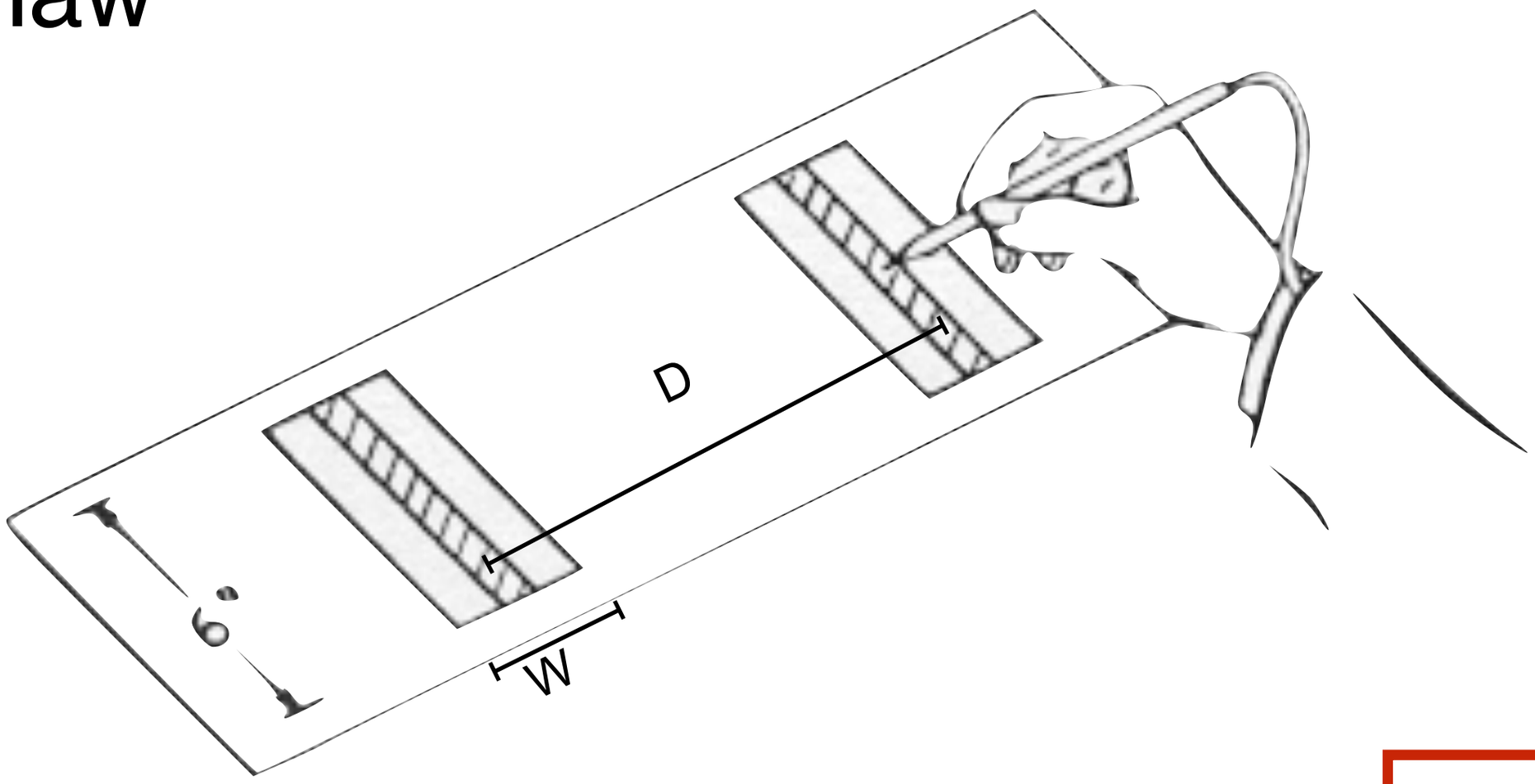
Illustration from http://sixrevisions.com/usabilityaccessibility/improving-usability-with-fitts-law/

Fitts' law

The time to acquire a target is a function of the distance to and width of the target.



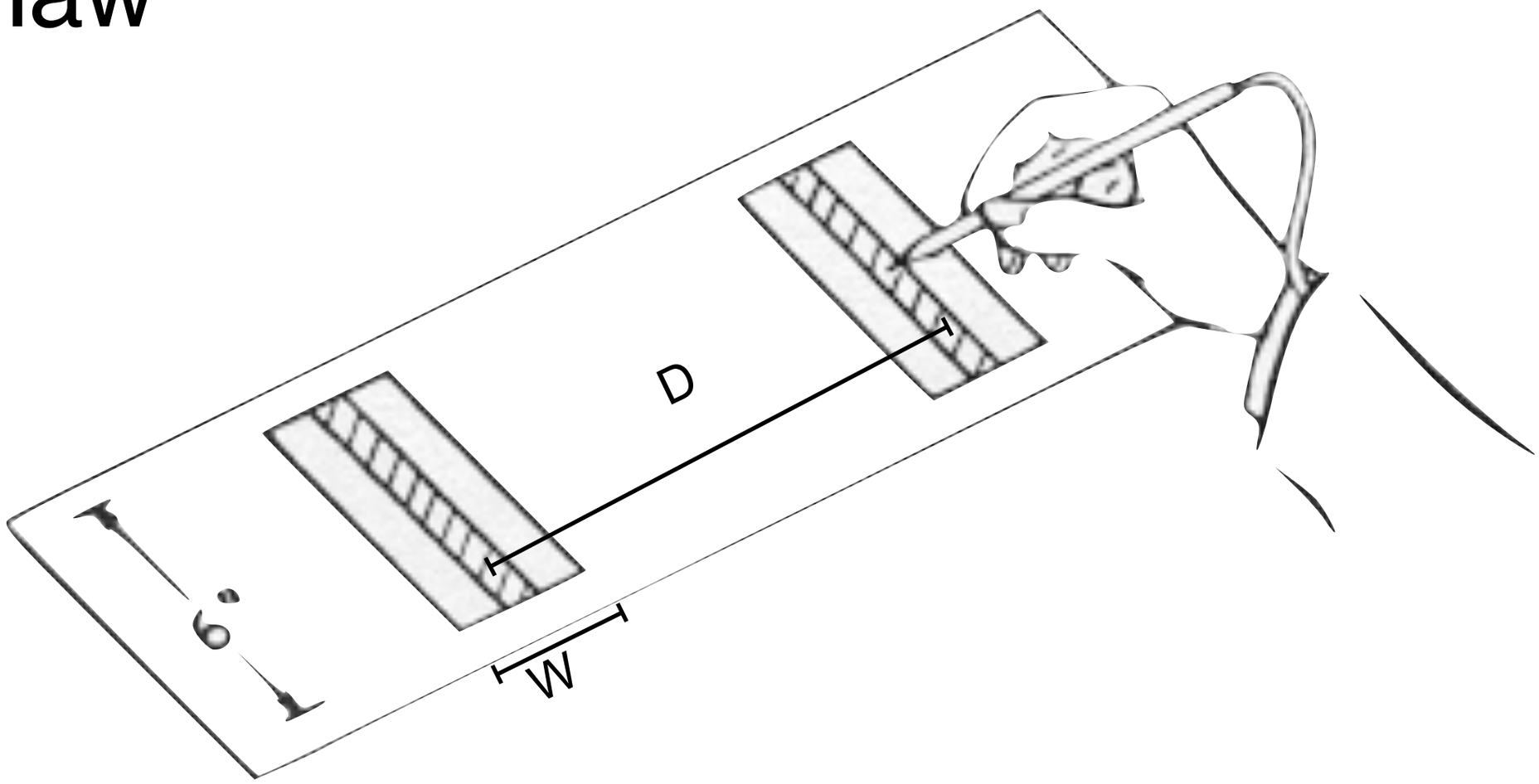
Fitts' law



$$MT = a + b * ID = a + b * \log_2(\frac{D}{W} + 1)$$

Coefficients
a: Intercept
b: Slope

Fitts' law



$$MT = a + b * ID = a + b * \log_2(\frac{D}{W} + 1)$$

Distance

Width

Movement Time

Coefficients
a: Intercept
b: Slope

UX Evaluation Approaches

Summativ vs. Formativ

Summative Evaluation

"Wie gut ist es geworden?" – Bewerten
Quantitativ
Abschließend, zusammenfassend, kriteriumsorientiert
Z.B. "Zertifizierung", Fragebögen, Effizienzmaße

Formative Evaluation

"Was muss wie umgestaltet werden?" - Verstehen
Qualitativ
Prozessbegleitend, verbesserungsorientiert
Z.B. "Design Theatre", Rollenspiel mit Requisiten

Analytisch vs. Empirisch

Analytische Evaluation

- Expertenurteil, "Begutachtung"
- Oft einzelne Urteile
- Durch Expertise urteilen

Empirische Evaluation

- Laienurteile, Laienperformanz
- Gruppen, statistische Analyse möglich
- Die Erfahrung sprechen lassen

Evaluationskategorien

	Formativ	Summativ	
Analytisch			Experten bewerten
Empirisch			Nutzer bewerten
	Verbesserungs-potential identifizieren	Holistische Bewertung	

Evaluationskategorien

	Formativ	**Summativ**	
Analytisch	Cognitive Walkthrough	Heuristic Evaluation	Experten bewerten
Empirisch	Fokusgruppe	**Experimentalstudie**	Nutzer bewerten
	Verbesserungs-potential identifizieren	Holistische Bewertung	

Heuristic Evaluation

Heuristiken

Ten Usability Heuristics, Nielsen

- Sichtbarkeit des Systemstatus
- Übereinstimmung zwischen System und realer Welt
- Benutzerkontrolle und –freiheit
- Konsistenz und Normen
- Fehlervermeidung
- Wiedererkennen vor Erinnern
- Flexibilität und effiziente Nutzung
- Ästhetik und minimalistisches Design
- Unterstützung beim Erkennen, Verstehen und Bearbeiten von Fehlern
- Hilfe und Dokumentation

GUI

Bauhaus

http://www.portal-dessau.de/uploads/pics/Bauhaus_TM_2010__2_.JPG

Braun SK6

http://www.flickr.com/photos/faasdant/3974968657/