



Ubiquitous Computing Visions

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Who cares about vision?

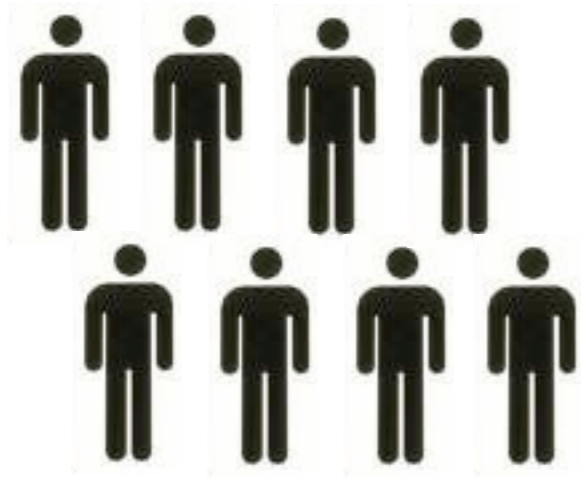
ubiquitous computing is unusual amongst technological research arenas

how? quote from Genevieve Bell and Paul Dourish

Structure of the lecture

the original vision
refinements and criticisms

History of computing



mainframes
(many-to-one)



personal computing
(one to one)



Mark Weiser

father of ubiquitous computing

chief scientist at Xerox PARC in
the United States

had the original ubiquitous
computing vision (circa 1991)



The vision



computer



computer



computer



ubicomp
(one-to-many)



computer



computer

The vision



ubicomp
(one-to-many)



What ubiquitous computing is

go beyond the traditional user interface

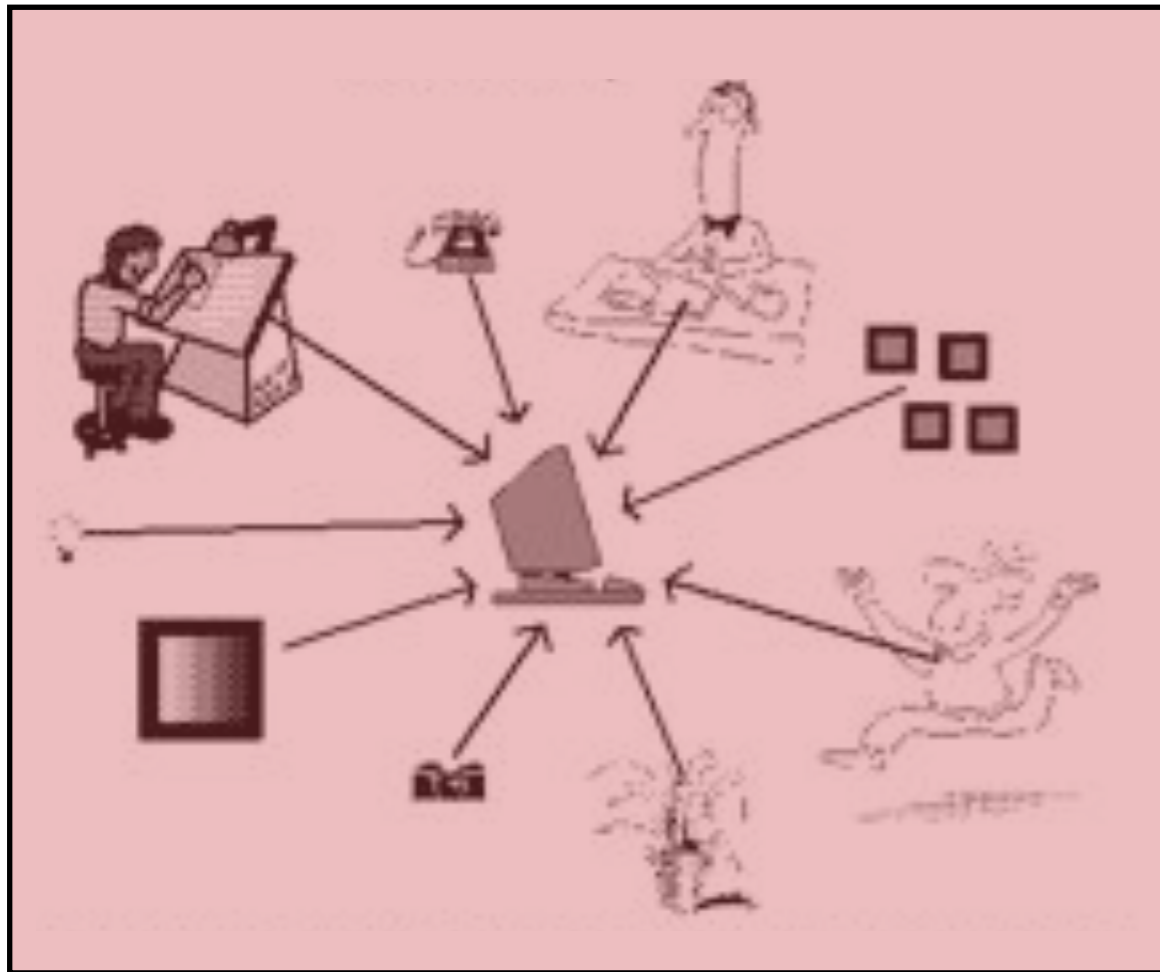
integrate into the real physical world

small location aware computers, networked

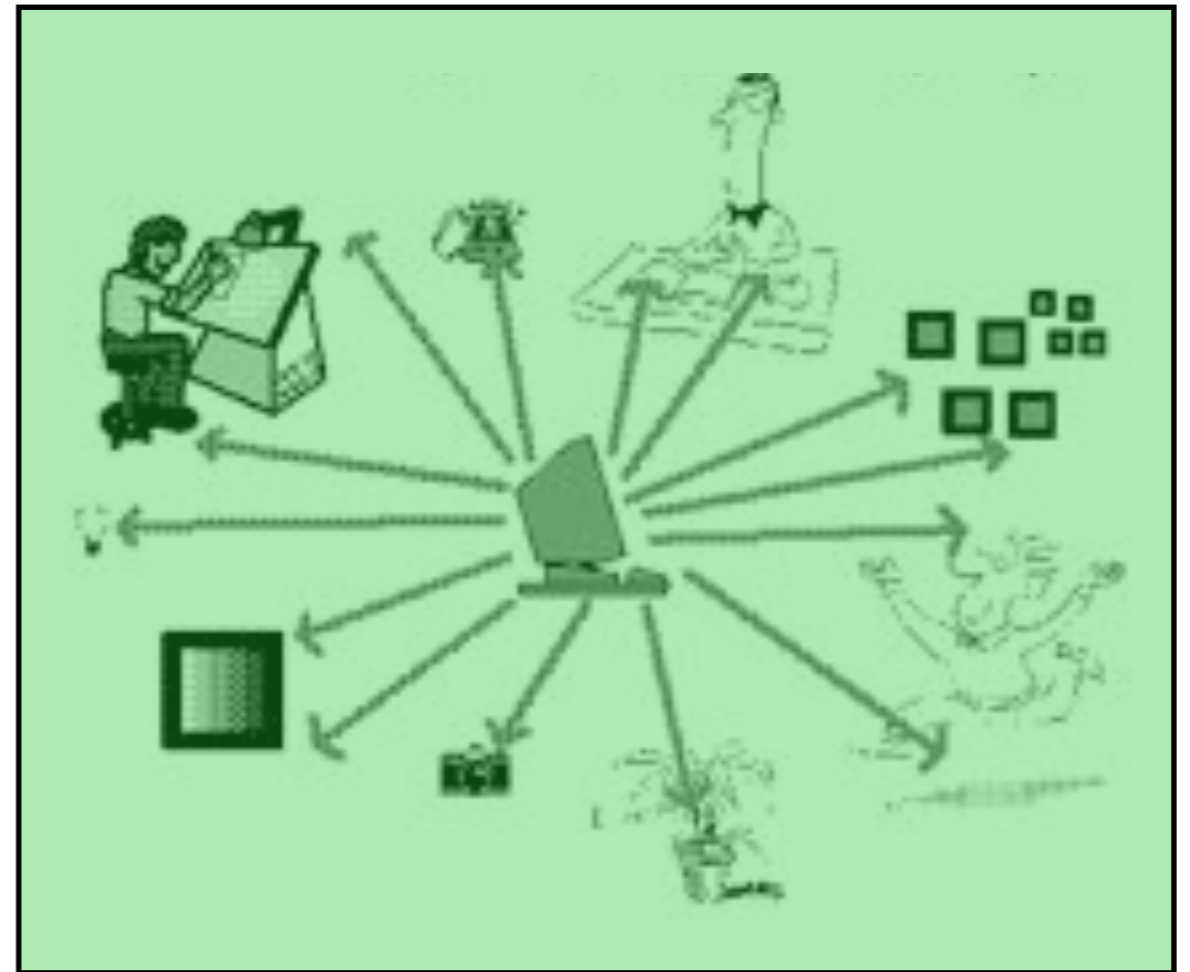
invisible

What ubiquitous computing is not

virtual reality



ubiquitous computing



Calm computing

one person, many computers

sounds stressful

Weiser: adding more tech for a better experience

A screenshot of a Windows error message displayed in a blue window titled "Wind...". The text is white and reads: "A fatal exception BE has occurred at 00010E36. The current application wi...". Below this, there are two bullet points: "• Press any key to terminate the cu..." and "• Press CTRL+ALT+DEL again to resta... lose any unsaved information in a...". At the bottom right, it says "Press any key".

A fatal exception BE has occurred at 00010E36. The current application wi

- Press any key to terminate the cu
- Press CTRL+ALT+DEL again to resta
lose any unsaved information in a

Press any key

Tabs, pads and boards

basic form factors in ubiquitous computing

tabs — PDAs, phones, employee badges, RFIDs, keychains

pads — paper, laptops, books

boards — video screens, bulletin boards, windows

Example: Sal's world

a fictional world to better illustrate ubiquitous computing concepts

core features from excerpt

- everything has a computer built in (intelligent alarm)
- the computers are relatively simple (yes and no are the only words)
- the computers are networked (alerted by restless sleep)

Are we there yet?

Weiser's anticipated cross-over: 2005 — 2020

modern computing: one person to several computers

we're still far from Sal's world

hidden computers are everywhere, but not really networked

Has the vision changed?



In summary

Weiser's vision is important

led to clarity in a futurist-inspired field

suggested new research directions

One more thing

Weiser was a drummer

in Severe Tire Damage (STD)



How's everyone doing?

Just checking :)

Modern ubiquitous computing

evolving Mark's vision

Criticism #1: the ubicomp vision is too general

the research direction needs to change

Disciplines in ubiquitous computing

context-aware computing

ambient intelligence

tracking and monitoring

Limited success: BlueEyes

research question: How can we make computers "see" and "feel"?

“The success of the BlueEyes project, however, was limited; an example of an achievement that is posted on its website is of a television that would turn itself on when a person in the room made eye contact with it. To turn it off, the person could ‘tell’ it to switch off.” -- Yvonne Rogers

Suggestion: get concrete

“improve existing experiences with ubiquitous computing”

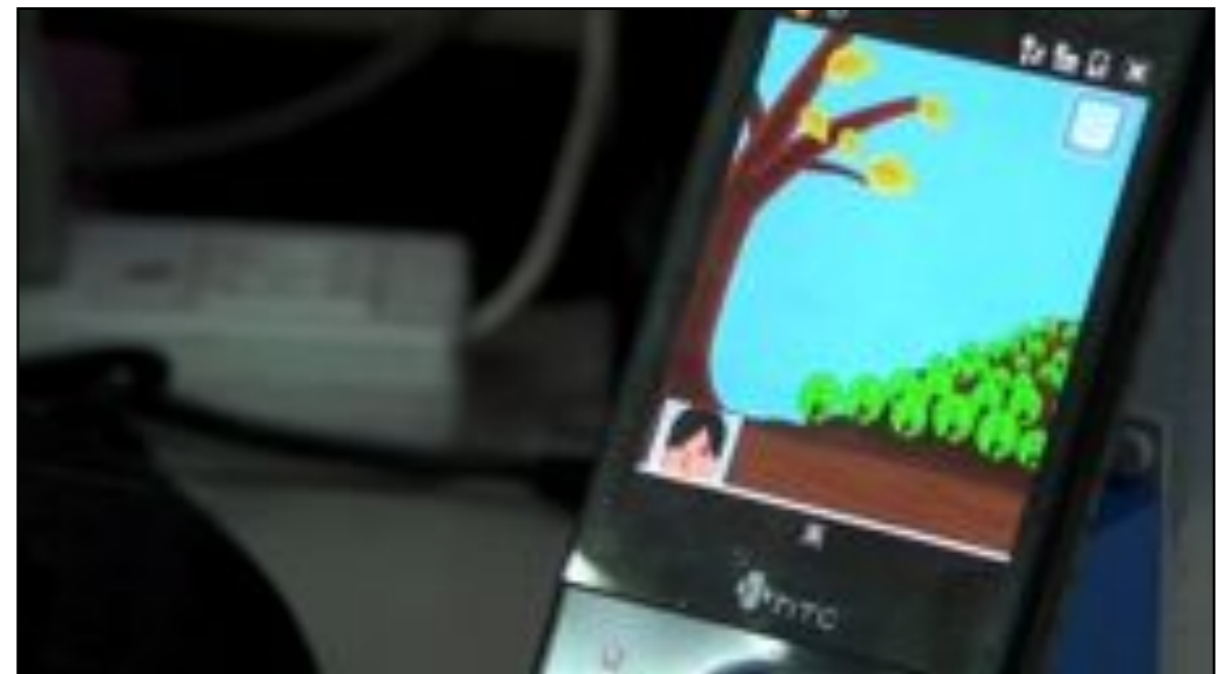
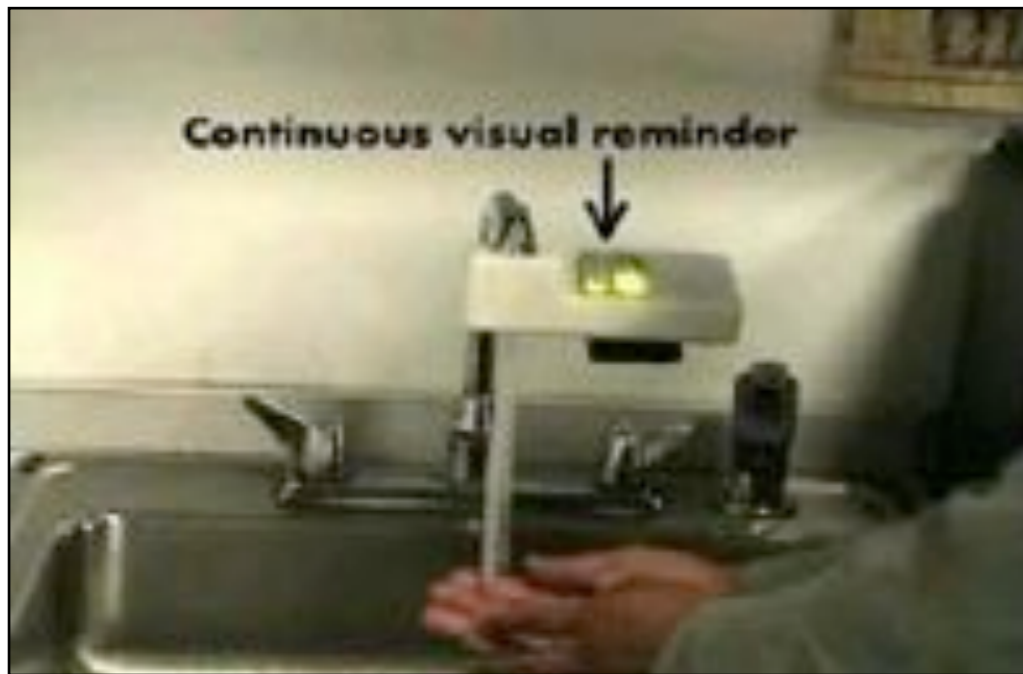
playing and learning in a mixed physical-virtual space

self-monitoring and behavioral change

Examples (playing and learning)



Examples (behavioral change)



Criticism #2: calm computing is a pipe dream

and ubicomp is already here

Singapore

SMS to hail cabs,

95% of population owns a cell

distributed toll road pricing

high internet penetration





Singapore is not calm, says Genevieve Bell

Criticism #3: ubicomp has a negative social impact

ubicomp encourages complacency and spawns privacy issues

Privacy issues

ubicmp: a lot of computers are always watching

what if someone malicious manages to get access to the computers in our sphere?

how would we know?

privacy issues of today are compounded

BIG BROTHER



**IS WATCHING
YOU**

Sal's world?

do we want to live there?

too much computer dependency already

do we want more?

comparison to Victorian England

Criticism #4: ubicomp is retro-futurism

why don't we have ubicomp yet?



this is retro-futurism

Bell asks some tough questions

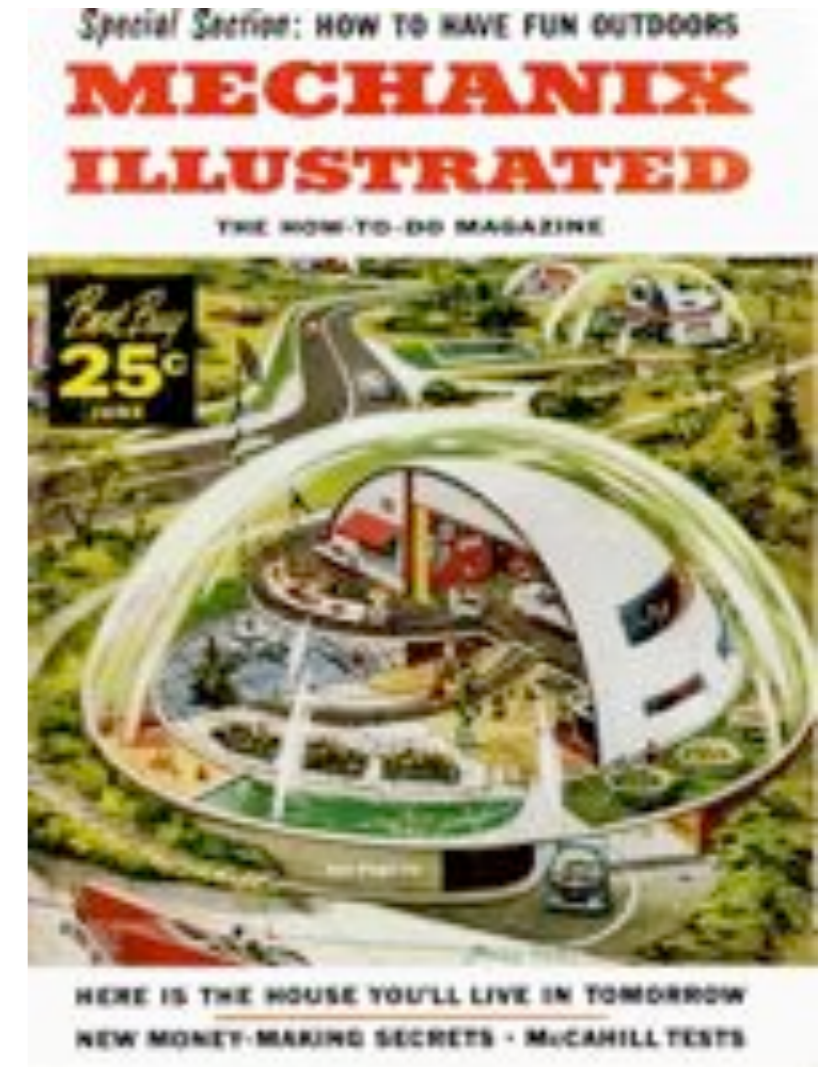
twenty years after Weiser

and 10,000 times the computing power later...

1. why is our vision still the same as Weiser's?
2. why isn't ubicomp here yet?



ubicomp?



maybe ubicomp is inherently unattainable?

questions?

thanks for listening