

Paper presentation:

*Isis, Cabbage, and Viper:  
New tools and strategies for designing responsive  
media*

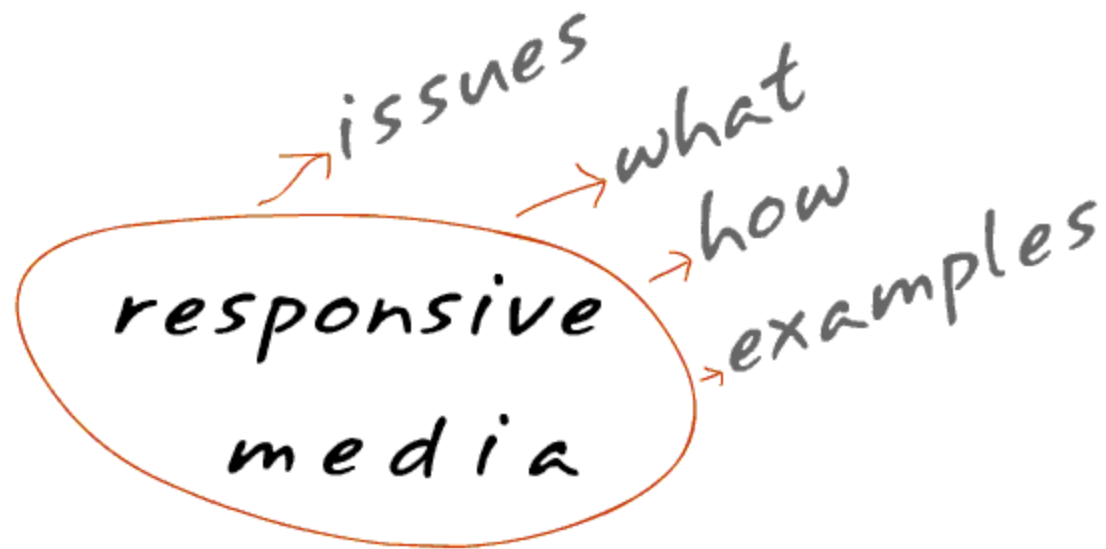
by Stefan Panayiotis Agamanolis

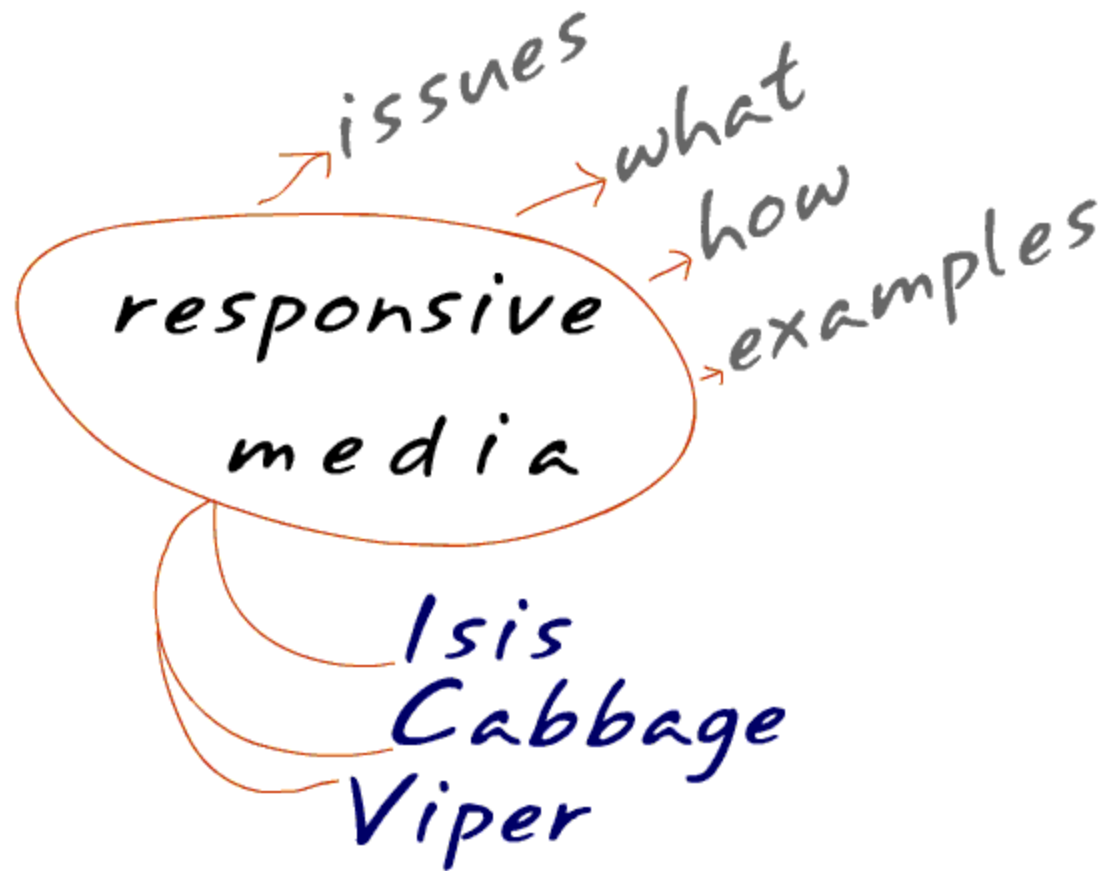
<http://www.agamanolis.com/>

Doctor of Philosophy in Media Arts and Sciences at Massachusetts  
Institute of Technology (MIT), dissertation, June 2001

[web.media.mit.edu/~vmb/papers/agamanolisphd.pdf](http://web.media.mit.edu/~vmb/papers/agamanolisphd.pdf)

*responsive  
media*





# responsive media

can:

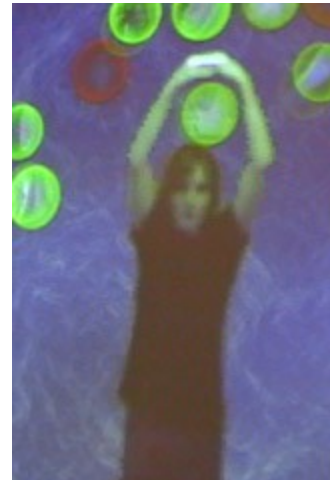
sense + react intelligently to:

- \* equipment
- \* direct interaction
- \* presentation conditions
- \* audience identity or profile
- \* history or anticipation (of use)



*TGarden was designed to allow human gestures to use video and audio as calligraphic media, to 'write and draw' the immersive environment on the fly.*  
<http://fo.am/tgarden/>

*In The Gardeners, visitors interact by moving and gentle touching. In response the balls grow and capture an image of their carer which lives on in their history. [www.sonjavank.com/gardening](http://www.sonjavank.com/gardening)*



# issues with responsive media design

Agamanolis argues that:

computer-based design tools

**DO NOT**

mirror the interactive  
character of responsive  
media + working practises

Compromise  
an ability to  
communicate  
effectively

# issues with responsive media design

The tools we have are still primitive mainly because of a lack of a good understanding of responsive media:

## 1. multi-sensory interfaces

failures in reflecting responsive media:

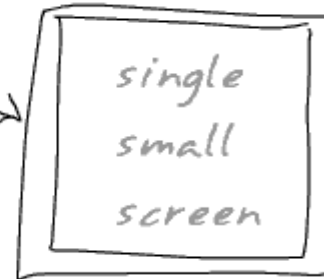
only possible responses:

keystrokes

mouse movement

mouse

keyboard



# issues with responsive media design

## 2. multi-person

### collaborations + experiences

failures in reflecting responsive

media:

discourages:

multi-person + skilled  
methods of working

single user  
computer





issues with responsive media design

3. multi-layered tasks  
+ thinking processes

failures in mirroring:

programmes often have a division in vision between design + coding. → MM Director  
→ Supercard

response behaviours have to be described by designers within rigid systems of abstract rules + lists of instructions.

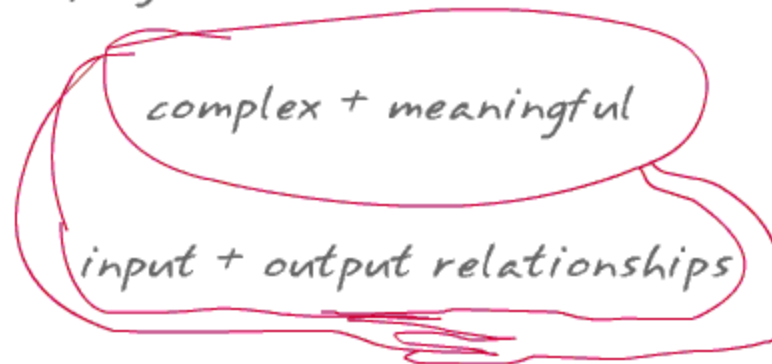
discourages: extending the programme,  
trial and error or experimental approaches.

# issues with responsive media design

Agamonolis argues for a framework that incorporates the:

- Multi-sensory
- Multi-authors/users
- Multi-layered

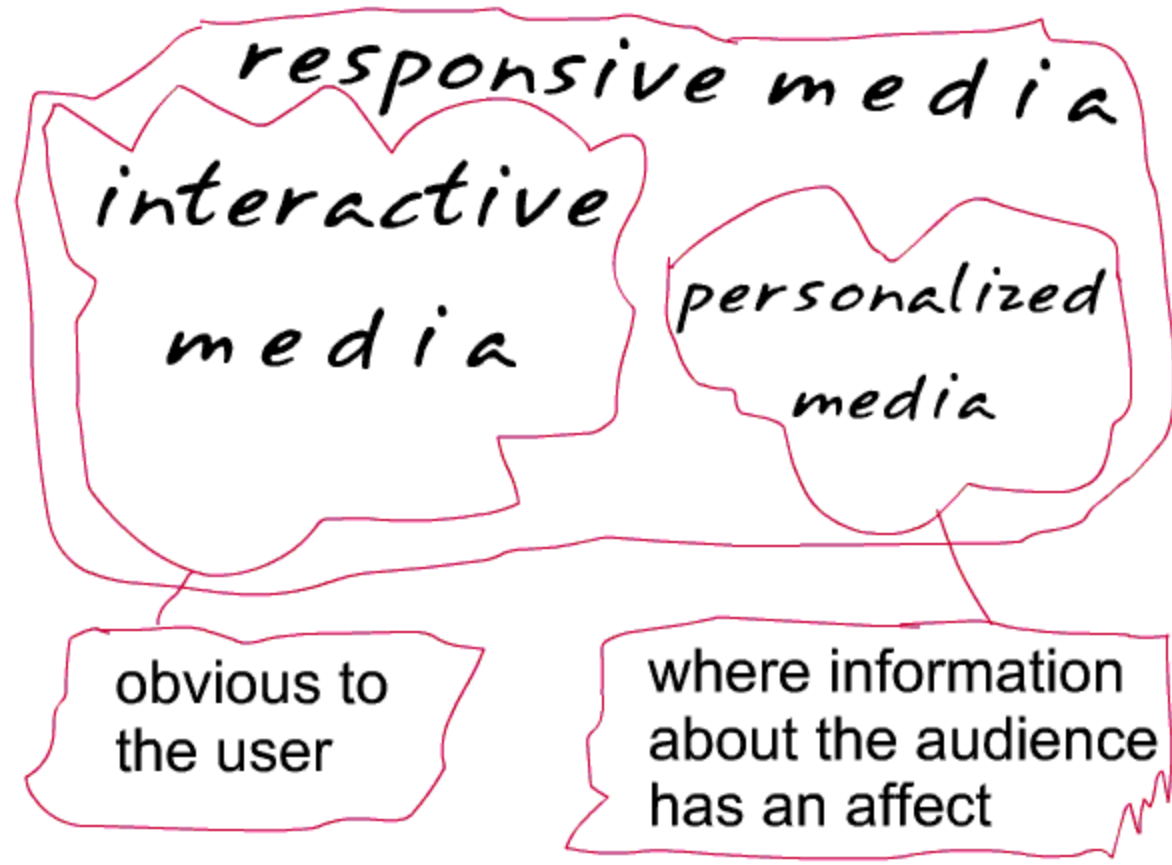
for developing:



what is responsive media

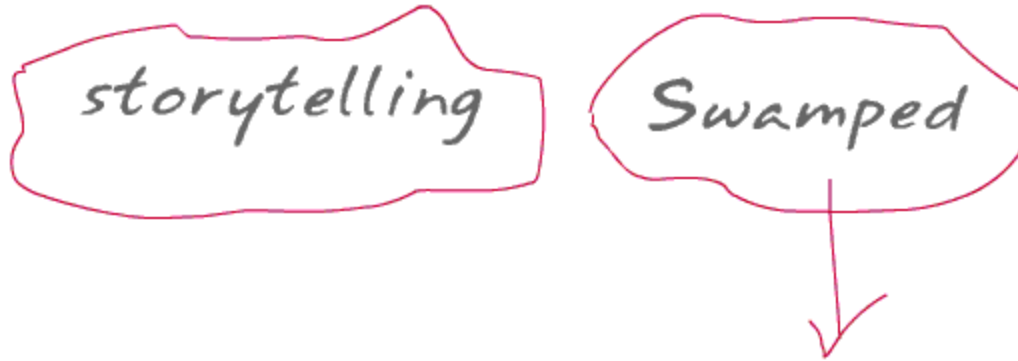


what is responsive media



# what is responsive media

Being able to alter the presentation while it is in progress



*Swamped: A Perceptually-Based Interactive Immersive Story Environment, 1998.*

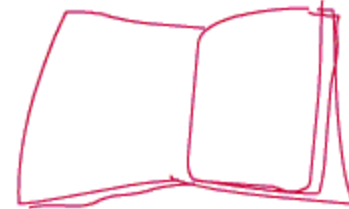
*In Swamped! the user stands in front of a projection screen showing the virtual world and the virtual chicken, while holding a toy similar to the chicken. The user can direct the chicken by making appropriate gestures with the toy. For example, wobbling the toy back and forth makes the virtual chicken walk; flapping the toy's wings makes it fly.*



# what is responsive media

"Oral cultures act + react at the same time...  
To act without reacting, without involvement,  
is the peculiar advantage of the Western  
literate man."

*Marshall McLuhan, 1994.*



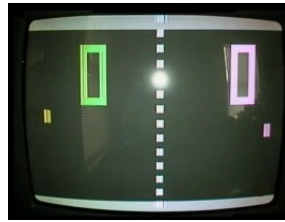
The Legacy of written media where there is a pronounced  
barrier between author and audience and the affects of this on  
the designing of media in general. - *unidirectional*

Telegraphy, telephony, radio and television provide the  
capacity for near instant responsiveness over great distances.

# what is responsive media

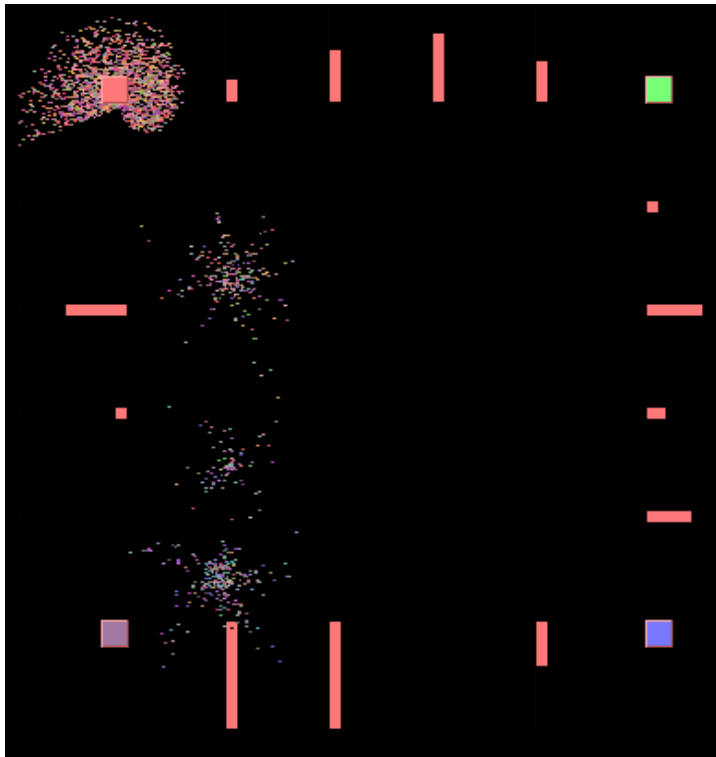
*A little History...*

1972 *Pong (Atari)*



1979 *Aspen Moviemap project (precursor of the MIT Media Lab)*

1982 *A touch screen manual (MIT Media Lab)*

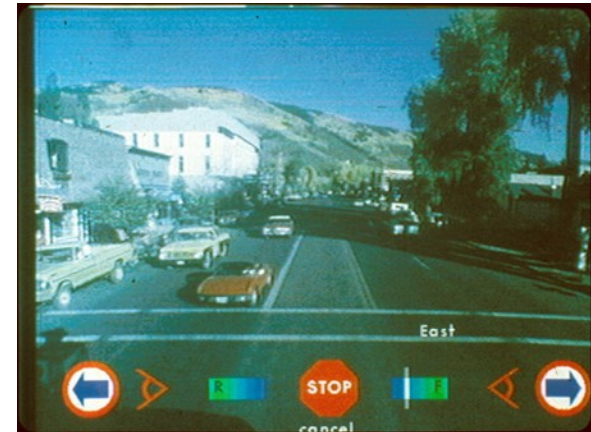


**1996 *Brain Opera*  
(MIT Media Lab)**

*The Brain Opera allowed audiences to play several computationally-mediated musical instruments and have their contributions incorporated into a multimedia performance inspired by the writings of Marvin Minsky.*

*Made by a team of over fifty artists and scientists at the M.I.T. Media Lab. The Brain Opera was an interactive musical event at the Lincoln Center Festival in New York City from July 23 to August 3, 1996. Afterwards, it toured worldwide to the Ars Electronica Festival in Linz, Austria, the NexOpera Festival in Tokyo, Singapore, and the Electronic Cafe International in Copenhagen.*

*The Brain Opera is a three-part work which is structured to incorporate the musical contributions of both on-line and live audiences.*



what is responsive media

why bother with this?

Audience engagement is dependent on how effective the communication is.



# what is responsive media

why bother with this?

Audience engagement is dependent on how effective the communication is.

## Education

-most educational media is unidirectional

- \* less limited self-directed access to knowledge
- \* a system that responds to a student's interests intelligently.

## Commerce

-most commercial media is unidirectional

- \* Adverts that have a sense of their audience, such as whether they had eaten or not.



what is responsive media

communication + awareness

building response behaviours into media can also change and improve the way we communicate and collaborate.



*Cinemat, built with Agamanolis' programming tool: Isis.*

*A magic carpet for orchestrating narrative streams of image and sound.*

## how should we design

Agamanolis proposes designing responsive behaviours into the tools used for making the media.

He refers to Shannon + Weaver's theory of communication where 3 issues are of importance.

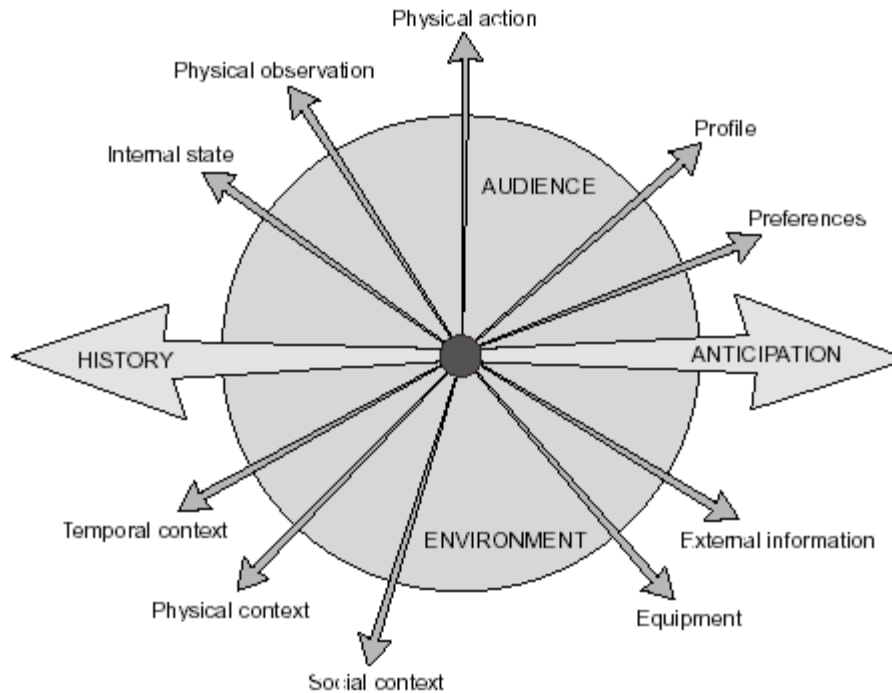
**Technical** - how accurately can the symbols communicate?

**Semantic** - how precisely do the transmitted symbols convey the desired meaning?

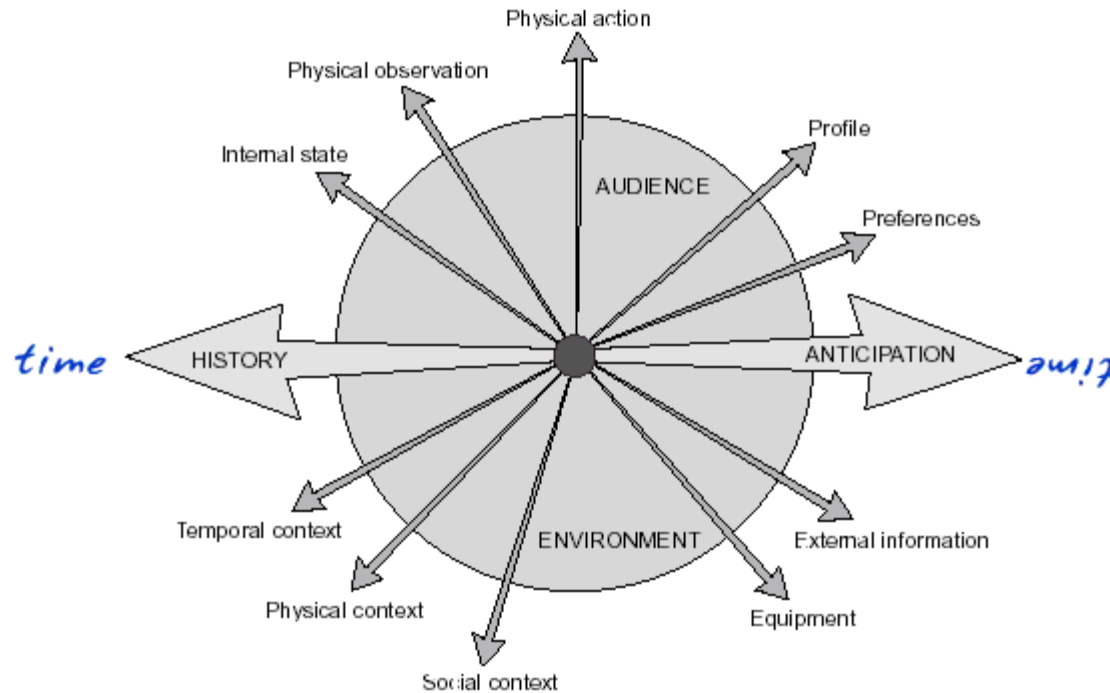
**Effectiveness**

- how effectively does the received meaning affect conduct in the desired way?

# how should we design

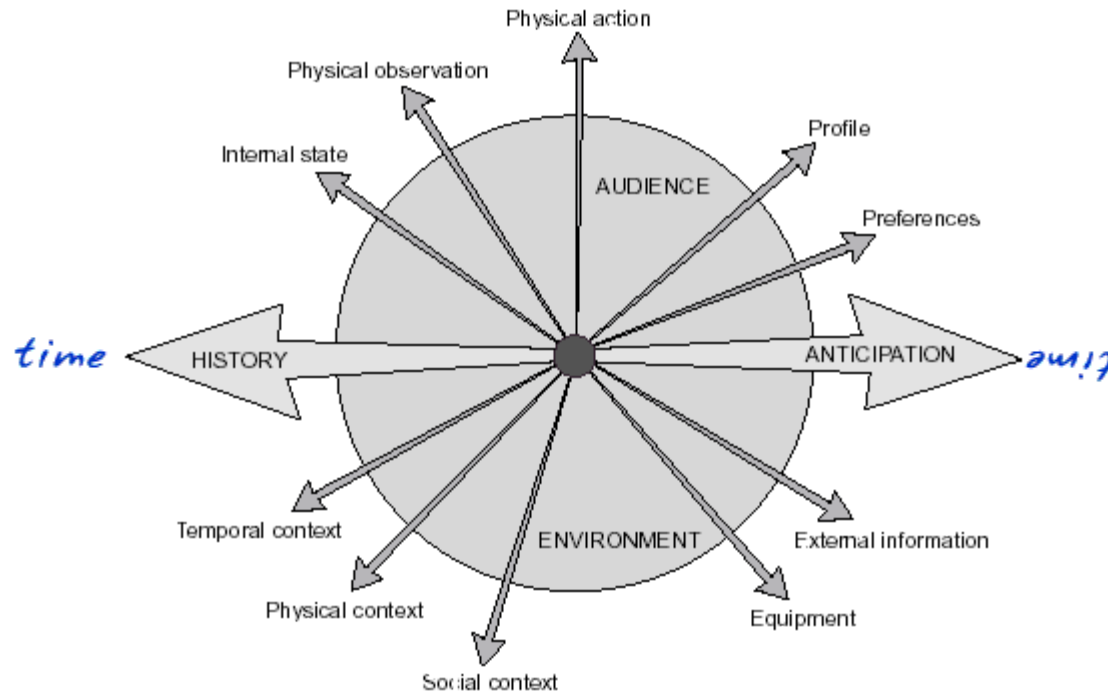


# how should we design



# how should we design

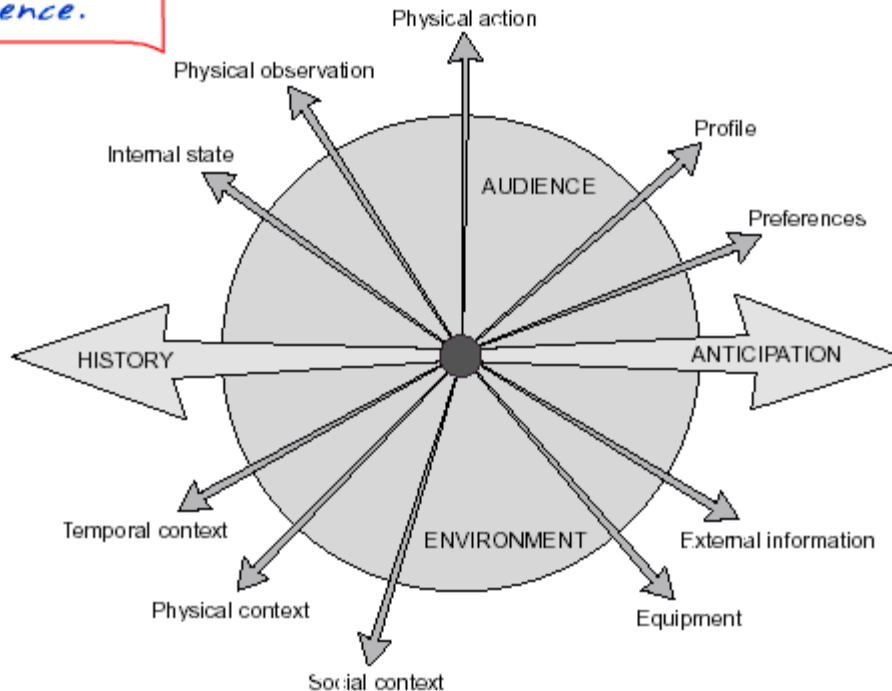
WILLED ACTIONS,  
Keyboard, mouse, joystick  
movements, body gesture  
or movement.



# how should we design

**PASSIVE ACTIONS,**  
facial expressions,  
posture, clothing  
colour, number  
in audience.

**WILLED ACTIONS,**  
keyboard, mouse, joystick movements,  
body gesture or movement.

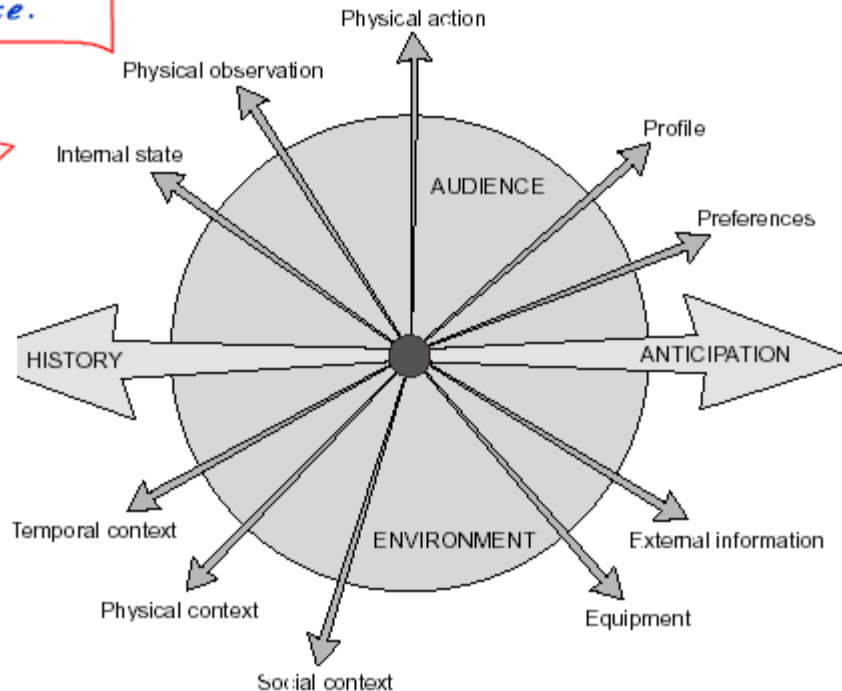


# how should we design

**PASSIVE ACTIONS,**  
facial expressions,  
posture, clothing  
colour, number  
in audience.

**WILLED ACTIONS,**  
keyboard, mouse, joystick movements,  
body gesture or movement.

**SUBCONSCIOUS,**  
heart rate,  
breathing, body  
temperature,  
skin conductivity,  
fatigue...



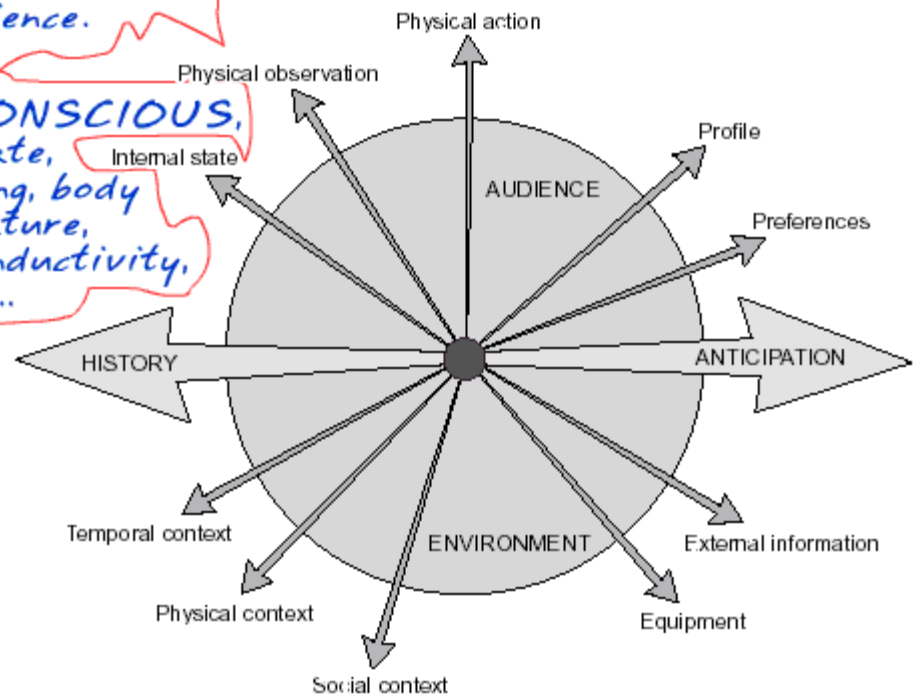


# how should we design

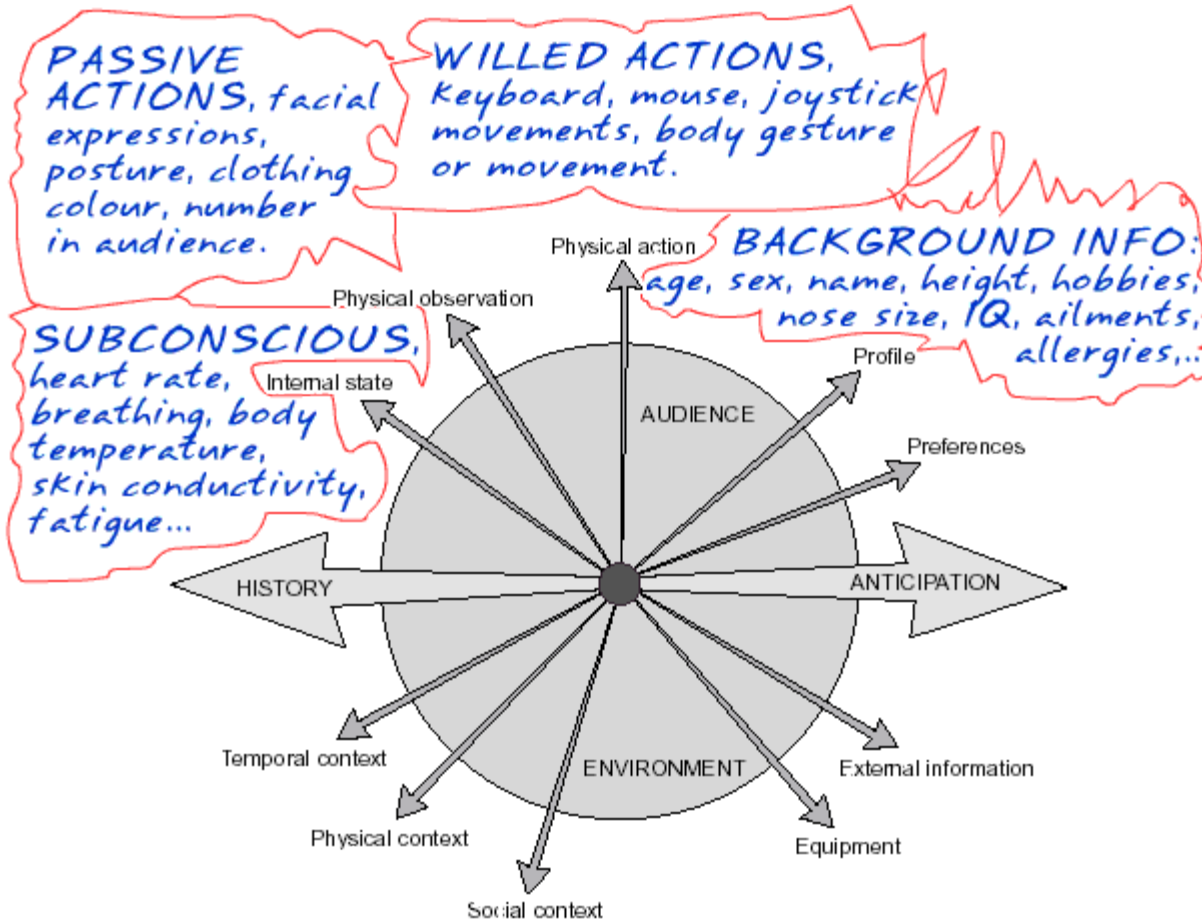
**PASSIVE ACTIONS**, facial expressions, posture, clothing colour, number in audience.

**WILLED ACTIONS**, keyboard, mouse, joystick movements, body gesture or movement.

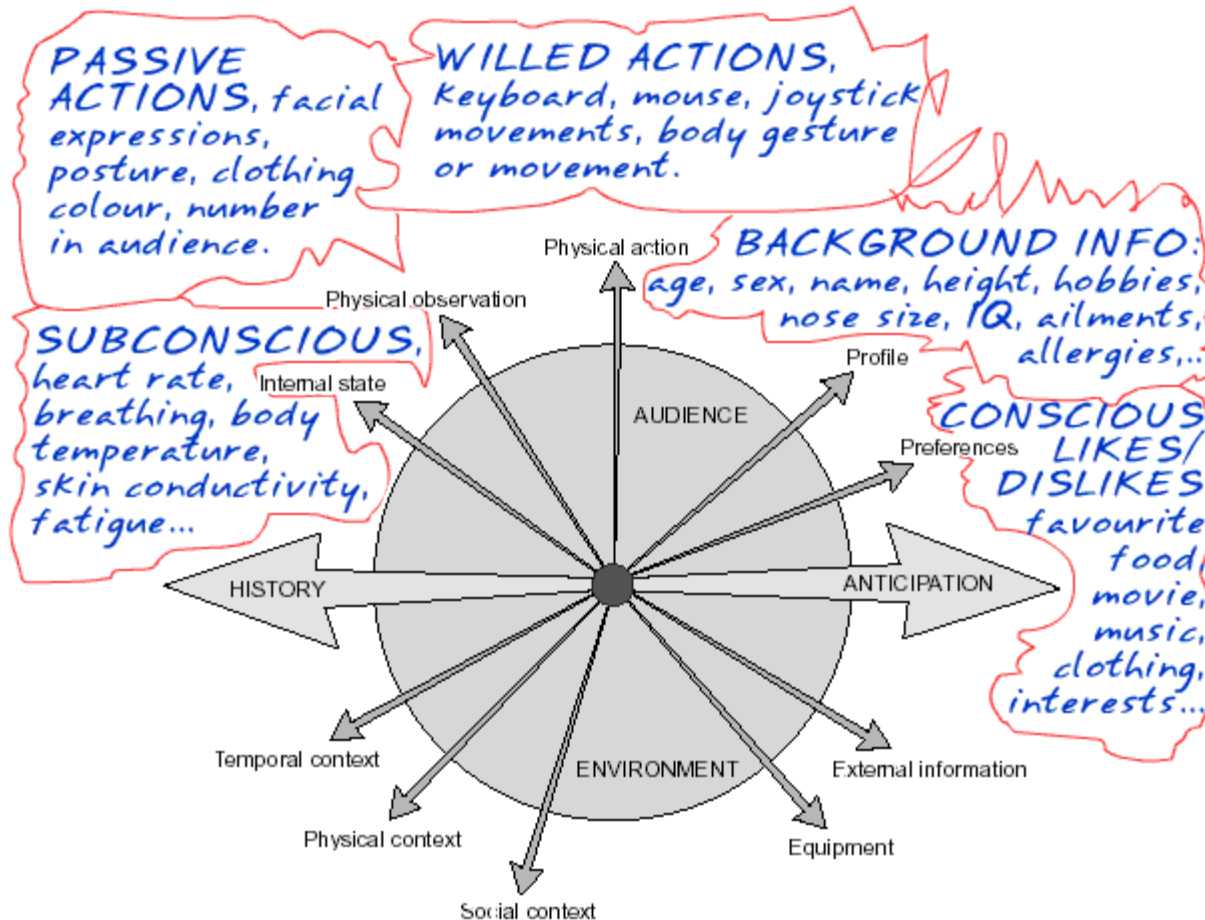
**SUBCONSCIOUS**, heart rate, breathing, body temperature, skin conductivity, fatigue...



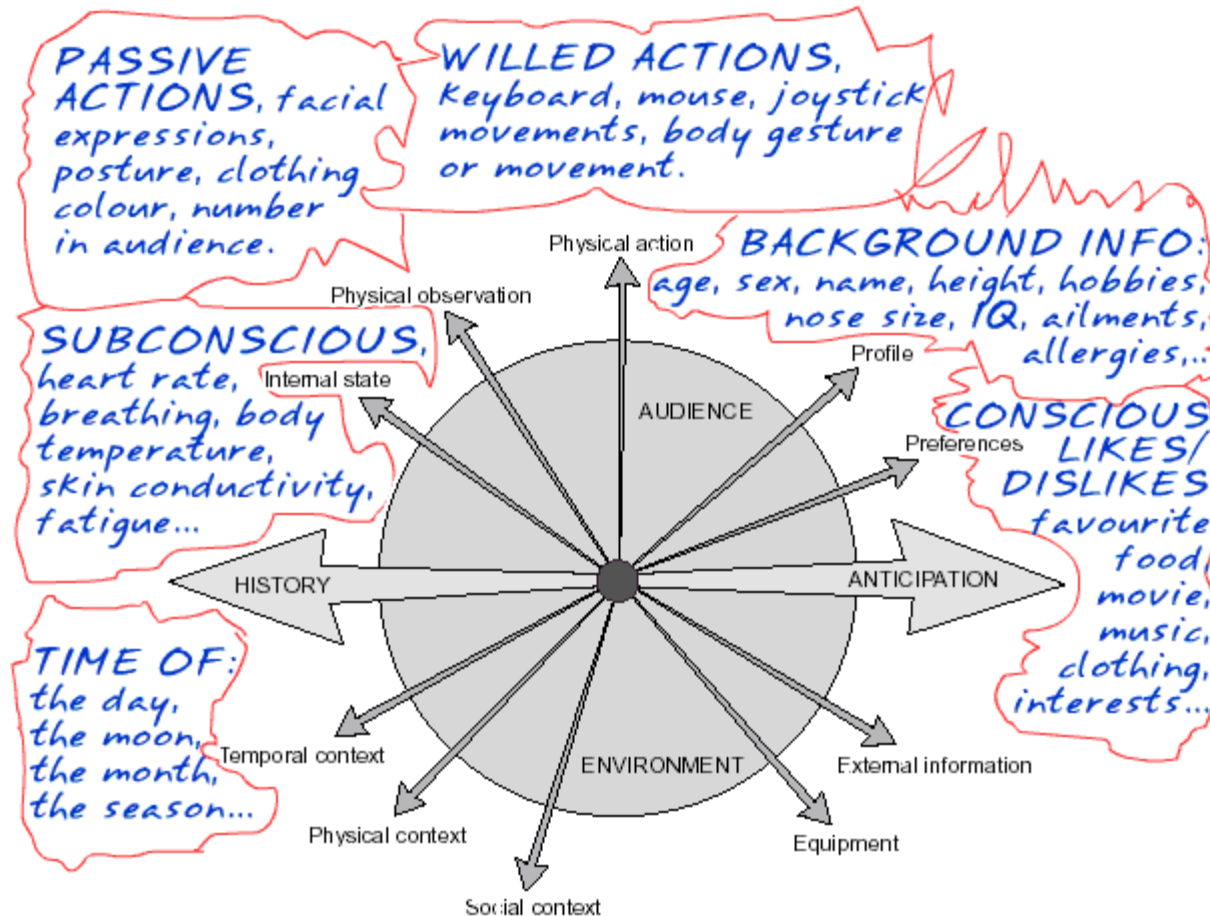
# how should we design



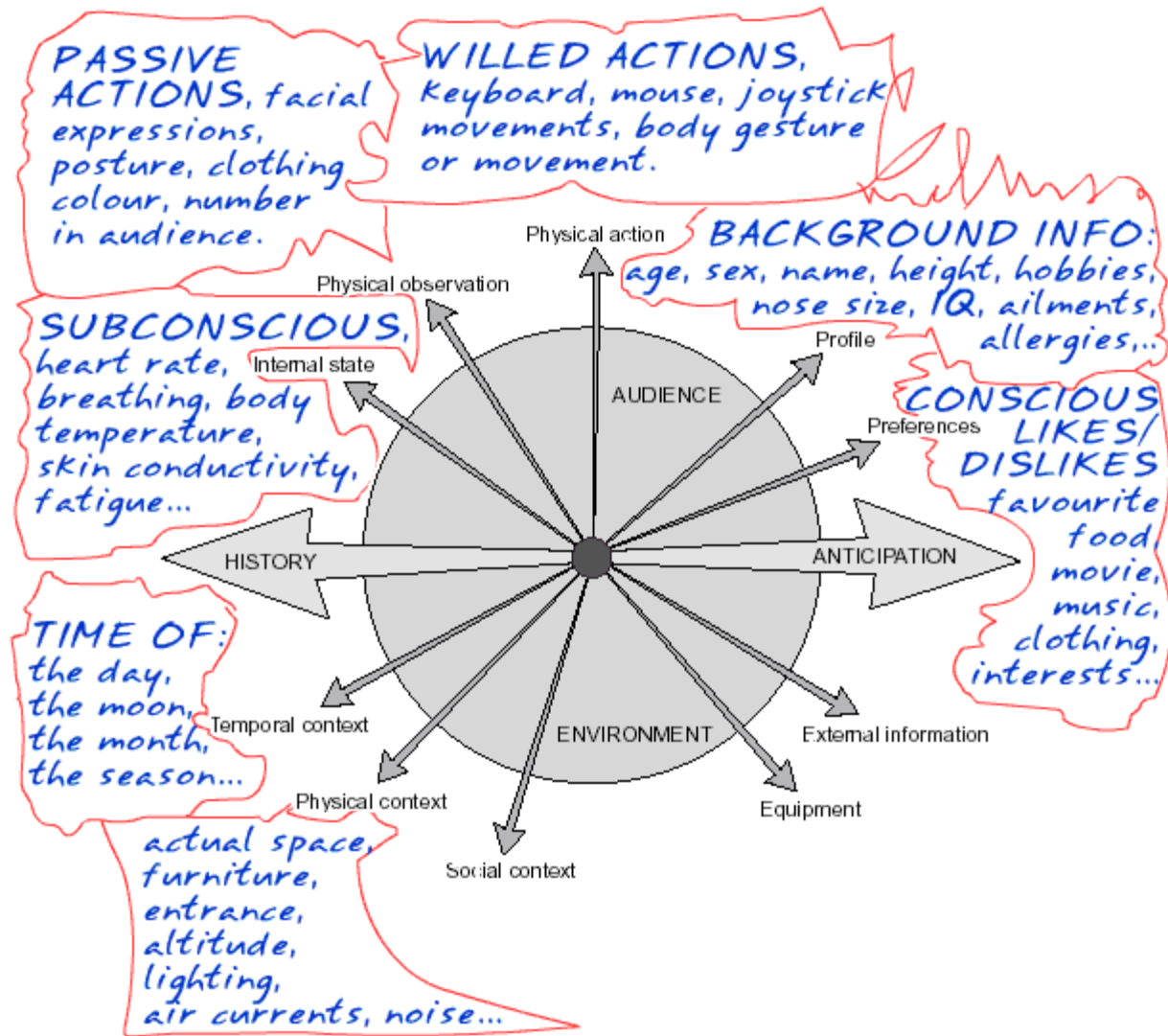
# how should we design



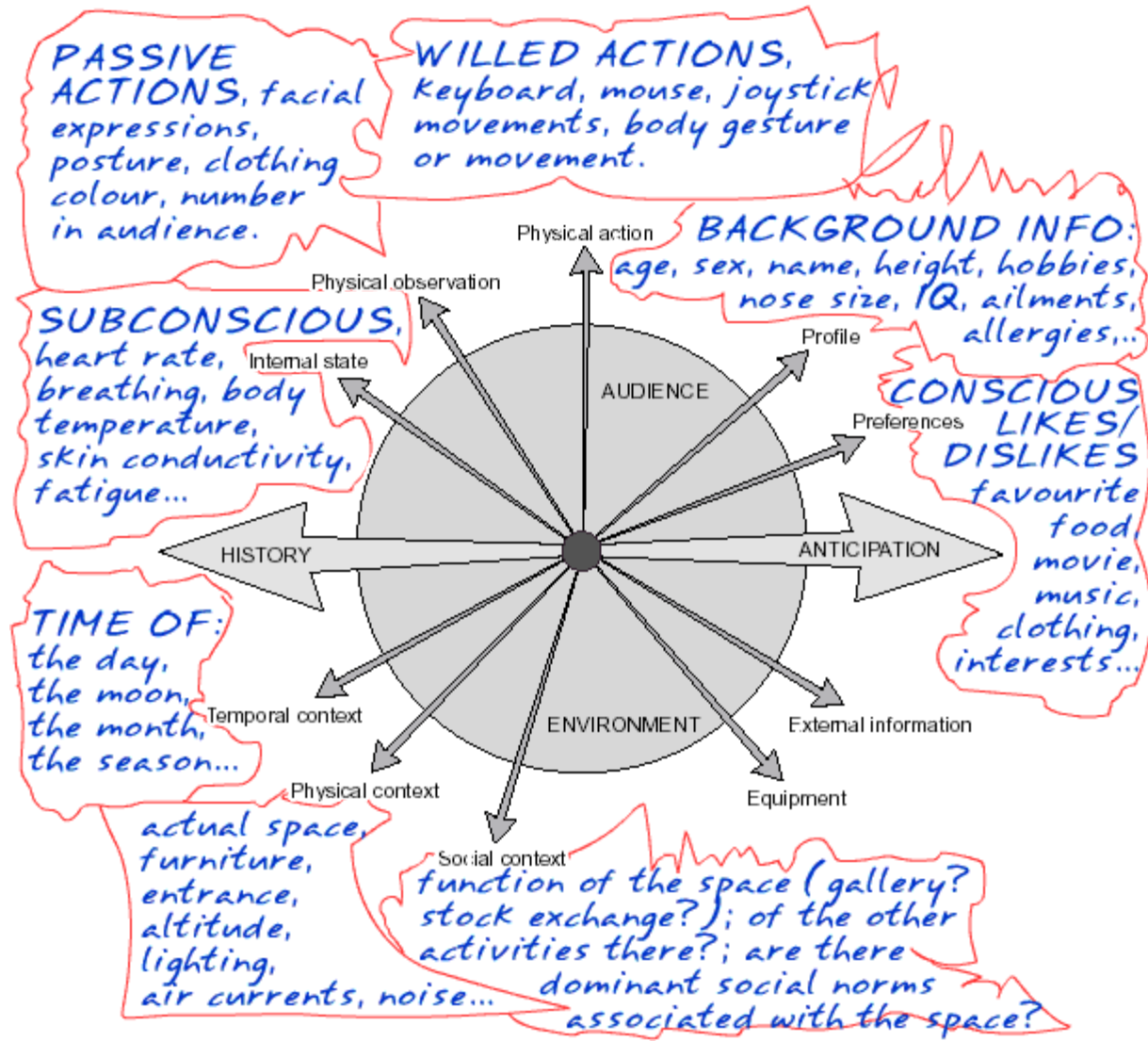
# how should we design



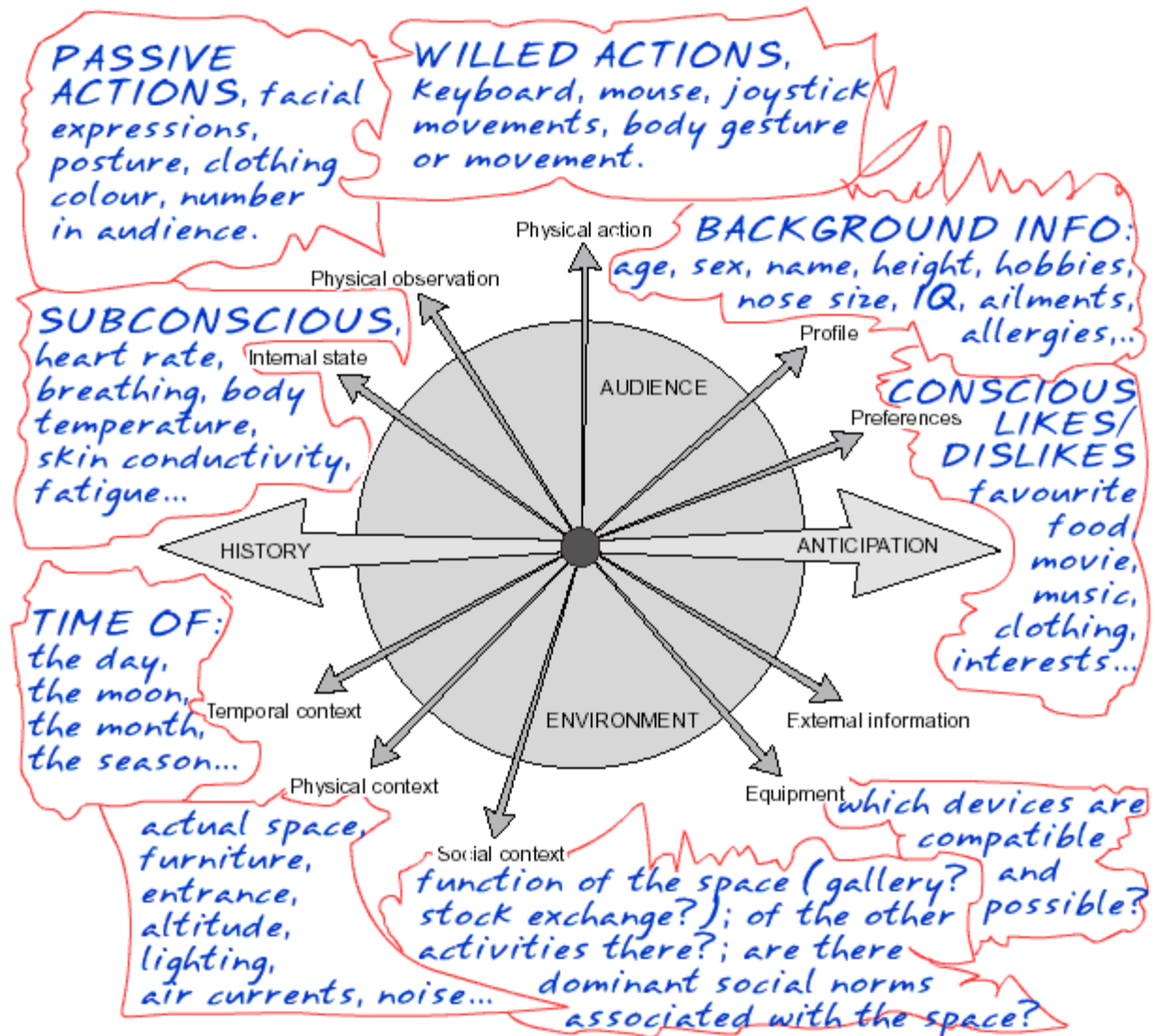
# how should we design



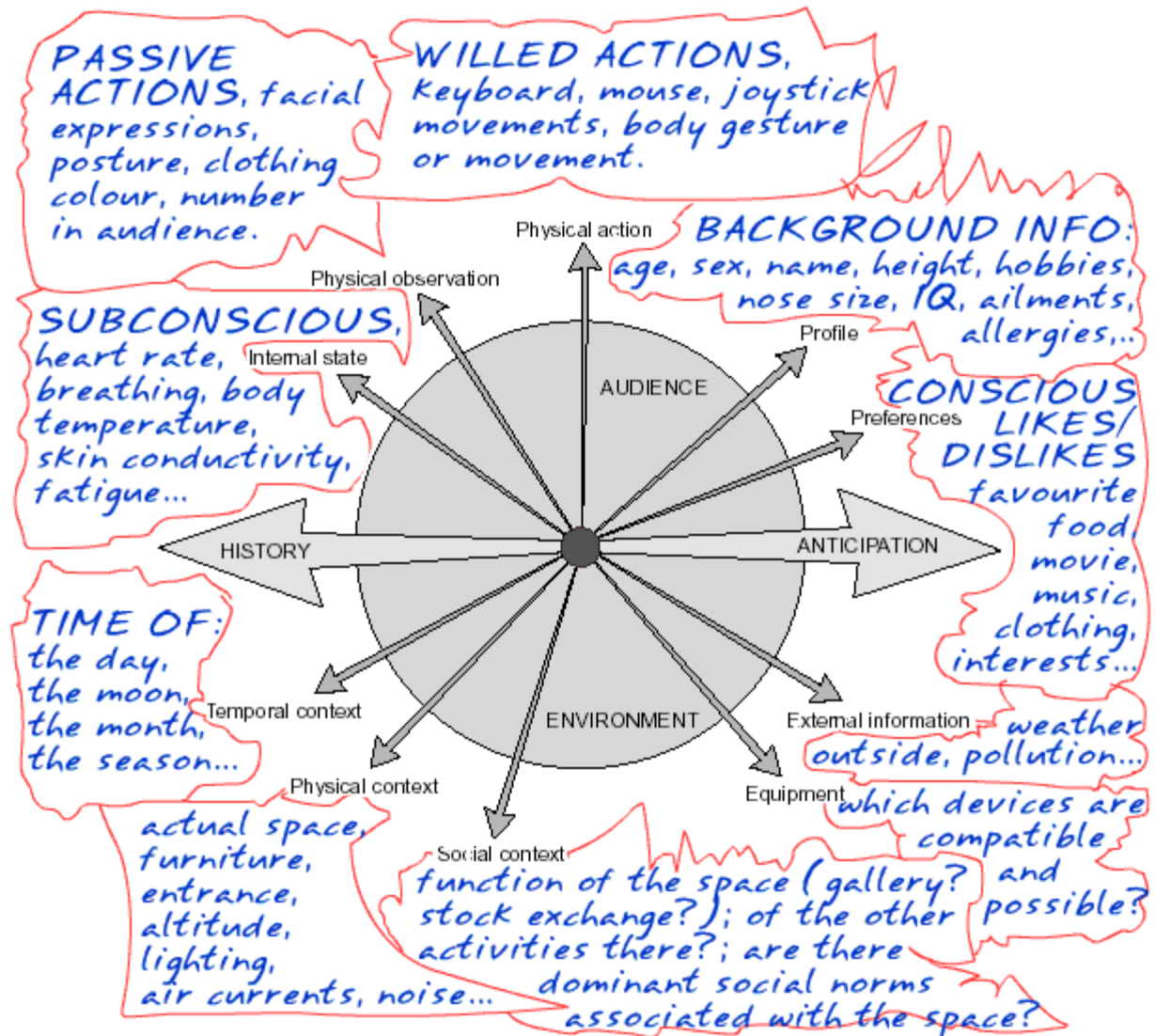
# how should we design



# how should we design



# how should we design





# how should we design

## A list of considerations:

- \* What information are you trying to convey?
- \* What behaviour are you trying to produce?
- \* What product are you trying to sell?
- \* What skills are you trying to develop?
- \* What feelings are you trying to induce?
- \* What thoughts are you trying to provoke?
- \* What memories are you trying to evoke?

# examples of responsive media design

## **ISIS – a programming language**

**For multi-sensory interfaces, multi-person collaborations, and multi-layered tasks and thinking processes.**



**The Birds** / a flock of digital pigeons that respond to passers-by .

<http://web.media.mit.edu/~stefan/isis/>

## **Isis Projects**

**RAW** / an audio/photographic tool for composing sonic flows surrounding visual moments

**Habitat** / a range of connected furniture for awareness of daily routines and rhythms between distant family members

**Open Window** / an ambient virtual window for bolstering wellness and healing potential during a hospital stay

**Reflexion** / a responsive virtual mirror for interpersonal communication

**Palimpsest** / a layered video manuscript of social interaction

**Office Voodoo** / an interactive sitcom controlled by voodoo dolls

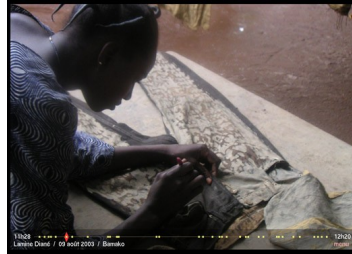
**Breakout for Two** / an exertion interface for sports over a distance

**The Birds** / a flock of digital pigeons that respond to passers-by.

**Guinness Ghost Stories** / a beer-driven interface to an interactive narrative experience

# examples of responsive media design

<http://web.media.mit.edu/~stefan/isis/>



**RAW** / an audio/photographic tool for composing sonic flows surrounding visual moments



April 2003  
prototype

June 2003  
prototype



## More Isis Projects

**Tagliately** / a tool for enriching personal objects with responsive media

**Telemurals** / an abstract audio-video link for encouraging sociable conversation between two distant spaces

**Portrait of Cati** / a portrait with a sense of its personal space

**iCom** / a multipoint awareness and communication portal for connecting remote social spaces

**Hopstory** / a wireless story distributed in space and time

**TeleTV** / a television displaced from its tuner by about 3000 miles

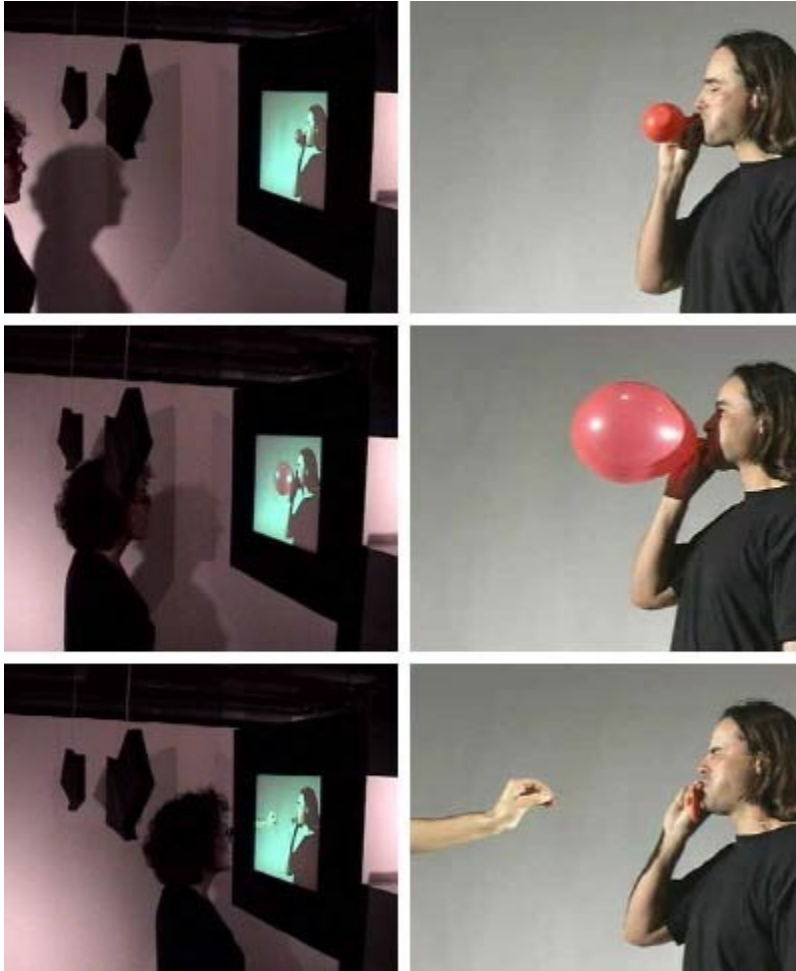
**Photo Table** / a remote photo sharing appliance for distributed communities

**Viper** / a tool for creating television programs that can re-edit themselves

**Bruce** / an music video television program that adapts to viewing habits and preferences

**Demo Jukebox** / an interactive kiosk with past and present Media Lab demo videos

# examples of responsive media design



**Magic Windows** / an interactive video installation in which spectator proximity influences story progression

<http://web.media.mit.edu/~stefan/isis/>

## **And more Isis Projects**

**Minerva** / an interactive video recipe system for the kitchen of the future

**LAFCam** / a video annotation tool based on laughter detection

**Impact TV** / a television that changes channels when objects are thrown at it

**Affective Learning Companion** video annotation tool

**Video Marble Track** / a physical marble interface for editing movies

**Synthesia** / a signal processing experiment that translates visual scenes into musical compositions

**Pl@tes** / an interactive video plate spinning competition

**Cabbage** / a case-based reasoning tool for responsive graphic design

**The Coding Auction** / video coding via a mixture of experts

**Aware Community Portals** / a shared information appliance for a transitional space

.....and many more projects.....

# examples of responsive media design

**Isis:** a programming language

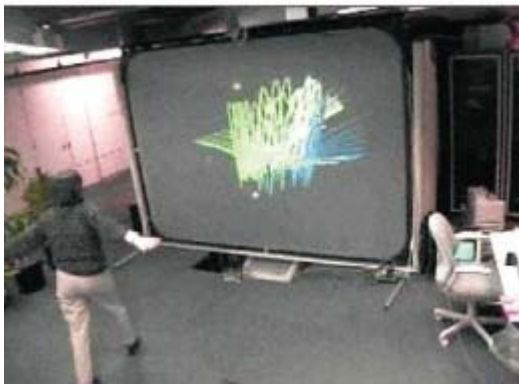
**Cabbage:** a case-based reasoning tool for responsive graphic design

**Viper:** a tool for creating video programs that can re-edit themselves

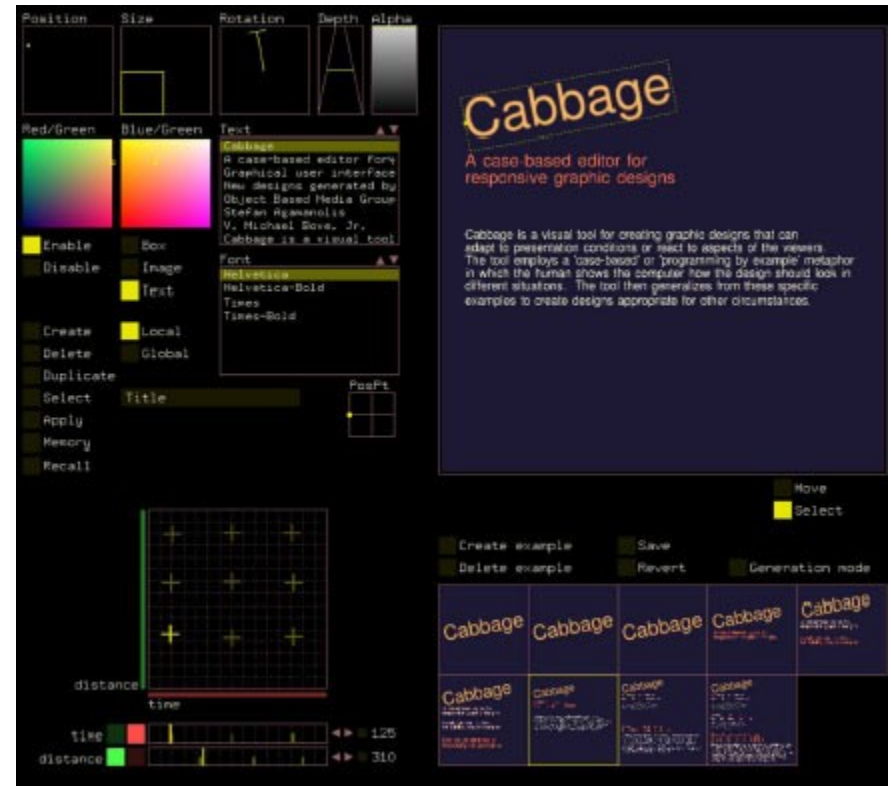
<http://web.media.mit.edu/~stefan/hc/projects/viper/>



**Cinemat**



**The Virtual studio dance stage:**



**Isis** is available as free software under the [GNU General Public License](http://www.gnu.org/licenses/gpl.html).

<http://web.media.mit.edu/~stefan/isis/>

-interpreted language only for linux (only so far)