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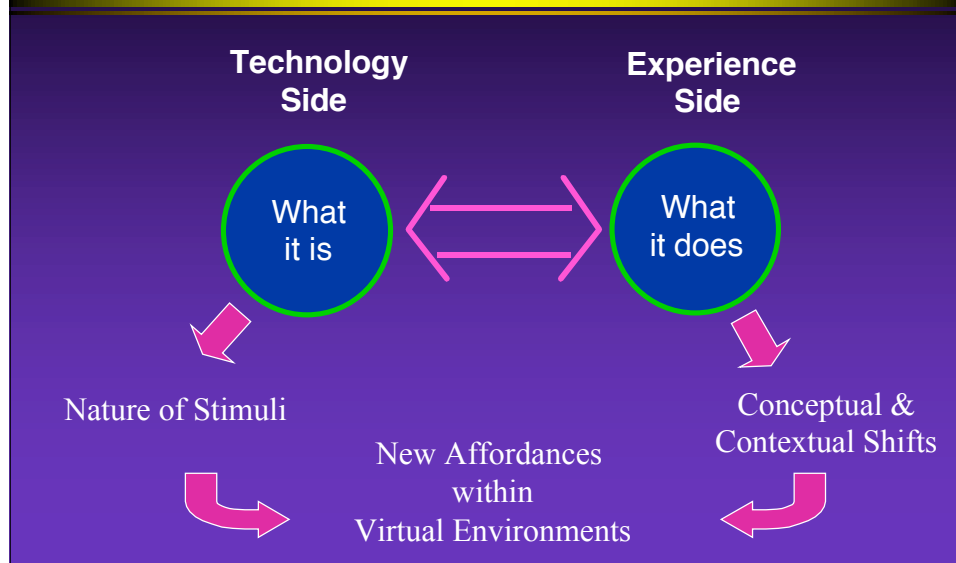
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Defining virtual space

Prof. Tom Furness
Industrial Engineering (AERB 141A)
University of Washington
Seattle, WA 98195
tfurness@u.washington.edu

Duality of Virtual Reality



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Virtual space: what it is!

Real Image



Point of contact: tfurness@u.washington.edu

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Virtual image



Virtual image x 2



Point of contact: tfurness@u.washington.edu

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Virtual image x 3



Virtual Images

Visual, auditory, tactile and olfactory stimuli which are transmitted to the sensory endorgans such that they appear to originate from within the three dimensional space surrounding the user.



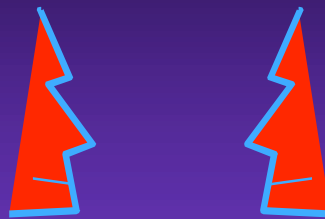
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Definition: interface

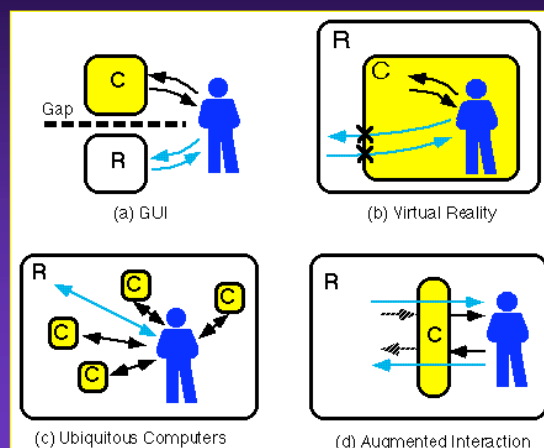
inter =
between

faces



between
faces

Types of Interfaces



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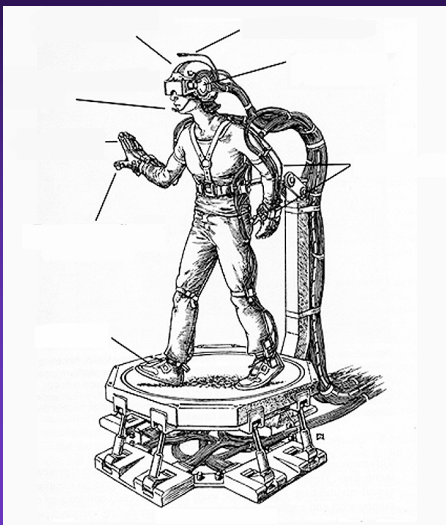
Virtual interfaces

A system of transducers, signal processors, computer hardware and software that create an interactive virtual space



Virtual interfaces

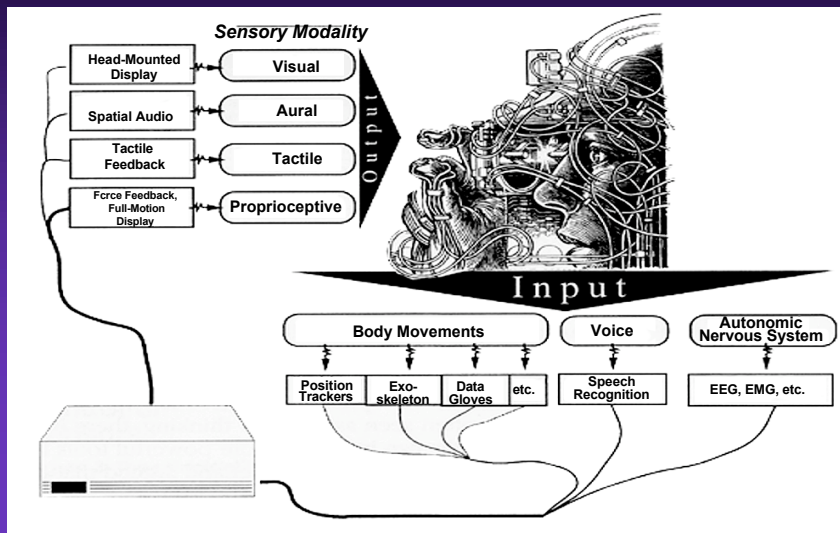
- Information is transmitted to the senses in the form of virtual images
- Psychomotor and physiological behavior is monitored and used to manipulate the virtual images



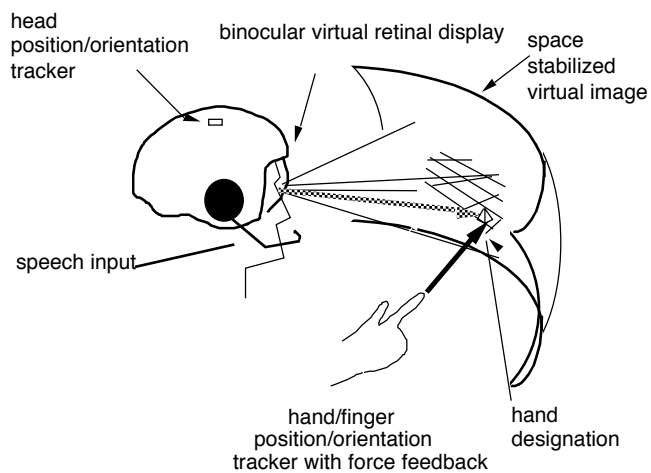
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Virtual Interface Concept



Virtual WorkStation



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Virtual environments/Virtual Reality

- The representation of a computer model or database in the form of a system of virtual images that creates an interactive *circumambience* which can be experienced and manipulated by the user.



Simulated Experience



Adapted from Robinette, 1992

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Cyberspace

A network of users and/or autonomous entities interacting through virtual interfaces.

Virtual Cockpit

A control/display medium which organizes and fuses information from aircraft subsystems and portrays this information in the form of a virtual visual, auditory and tactile circumambience for rapid assimilation by the pilot.

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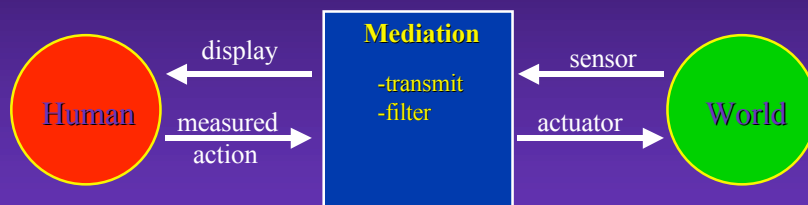
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Recorded Experience



Adapted from Robinette, 1992

Transmitted Experience



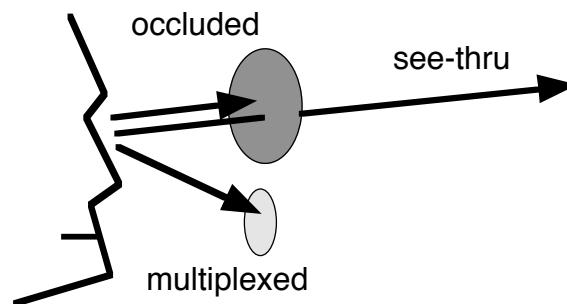
direct action

Adapted from Robinette, 1992

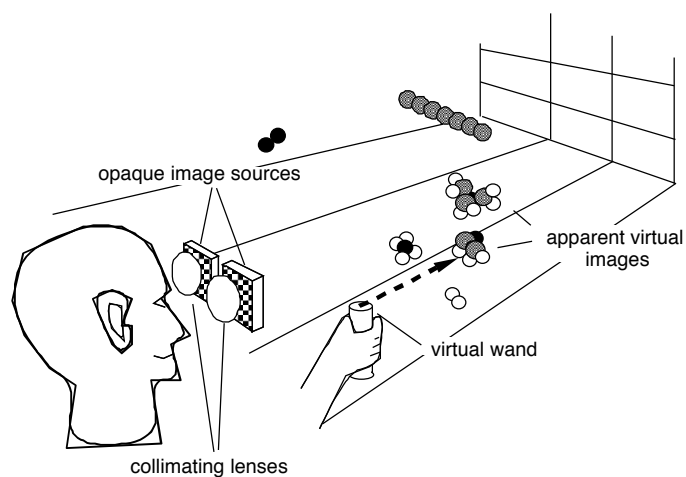
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TYPES OF VIRTUAL VISUAL DISPLAYS



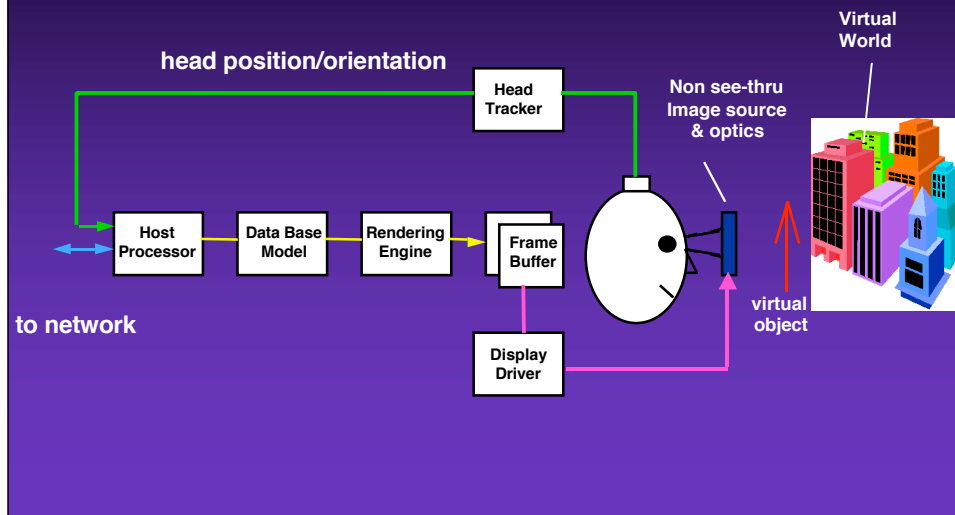
OCCLUDED VIRTUAL DISPLAY



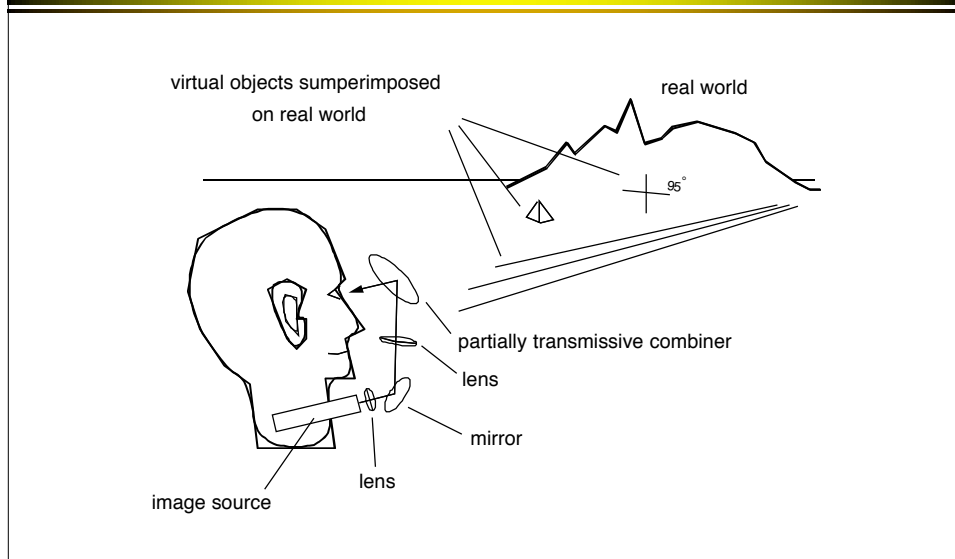
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Immersive VR Architecture



SEE-THRU VIRTUAL DISPLAY



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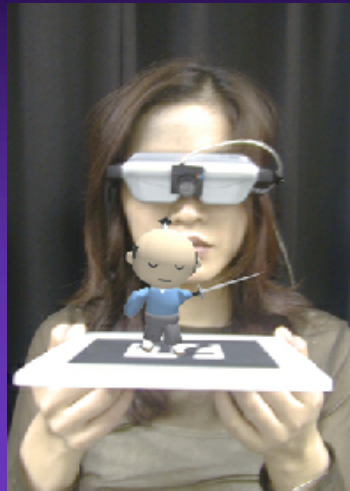
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Augmented Reality

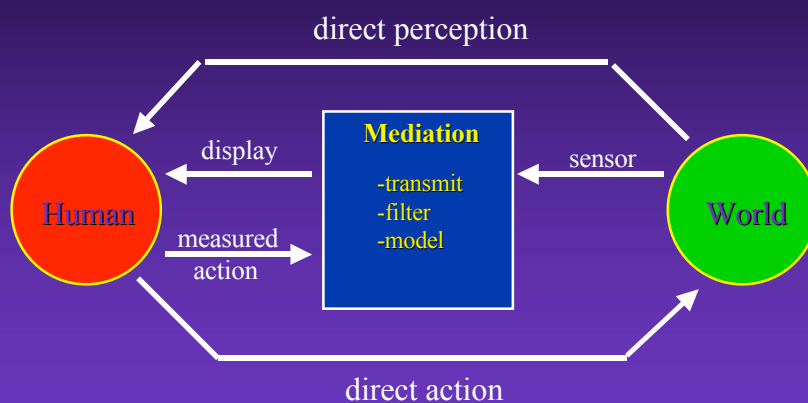
- The superimposition or compositing of virtual images in combination with real world images.



Image Courtesy of Kaiser Aerospace



Augmented Vision

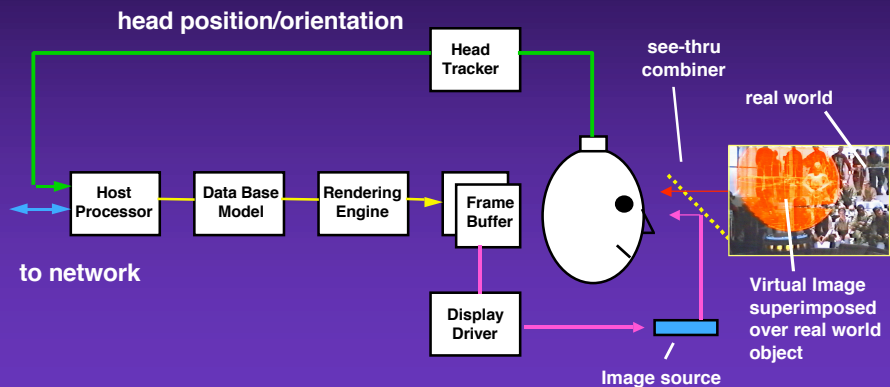


Adapted from Robinette, 1992

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See-thru AR Architecture

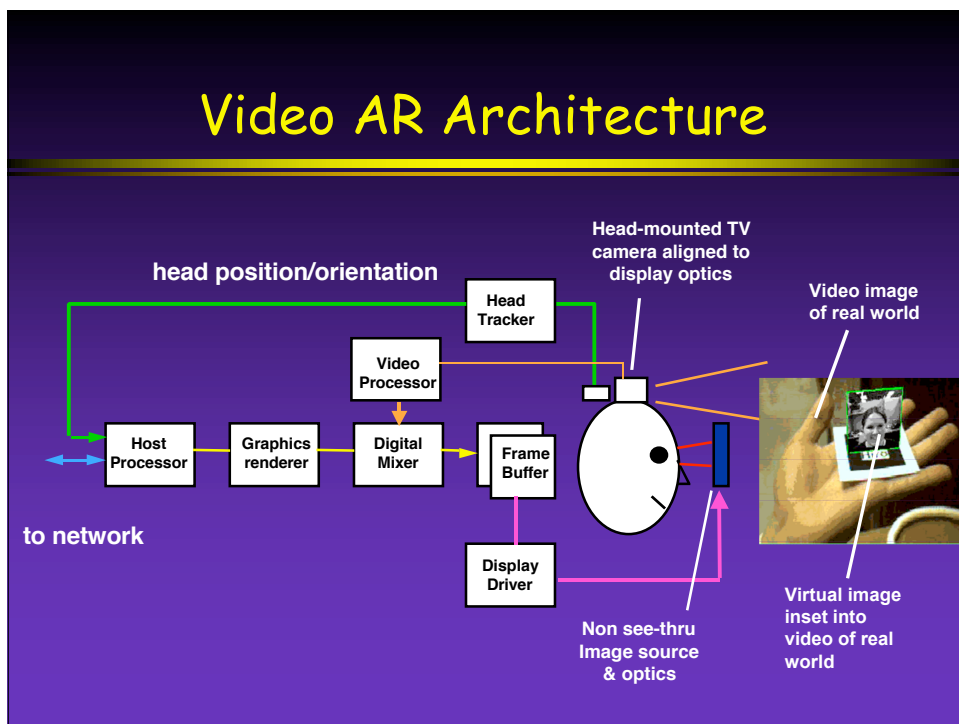
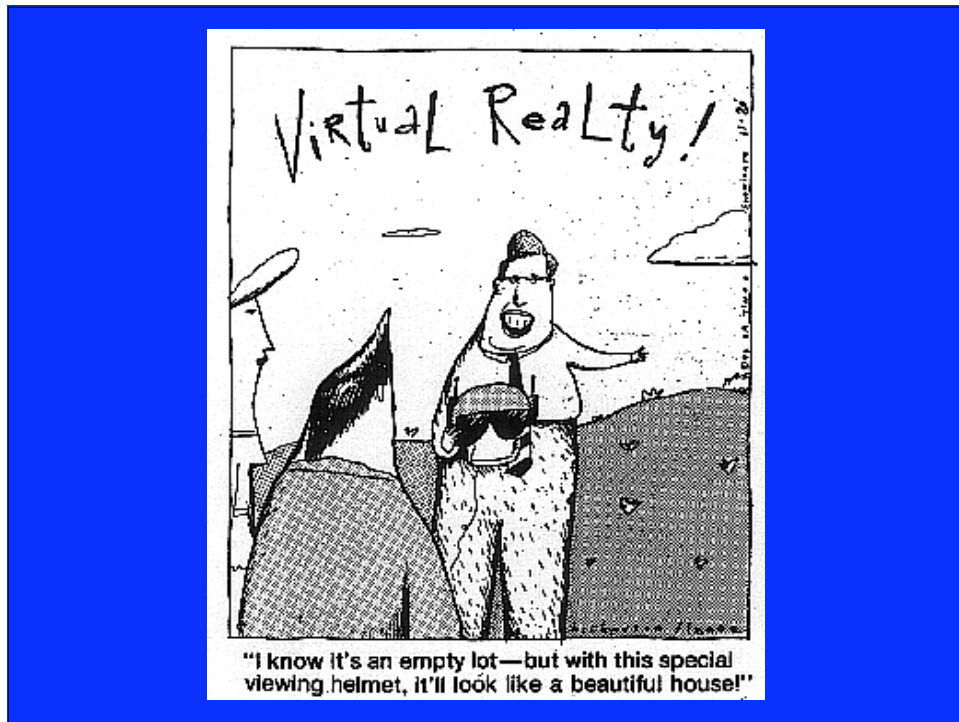


Virtual images in real space



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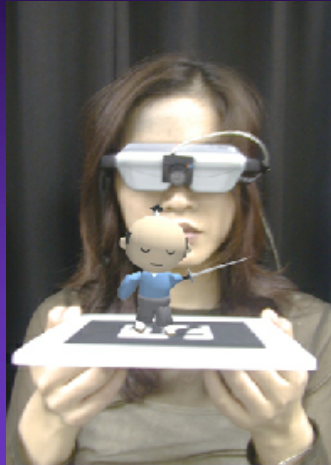
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Mixed Reality



A person in your hand

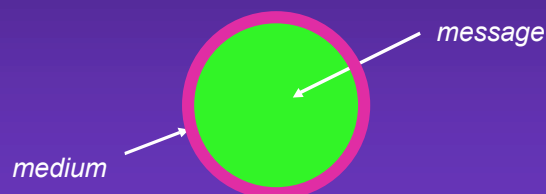


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Virtual space: what it does!

The 'message' & the 'medium'

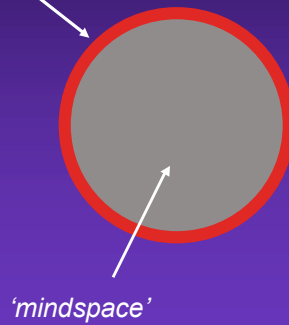


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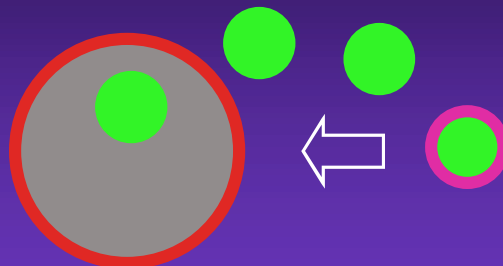
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Human

Human sensory & psychomotor processes



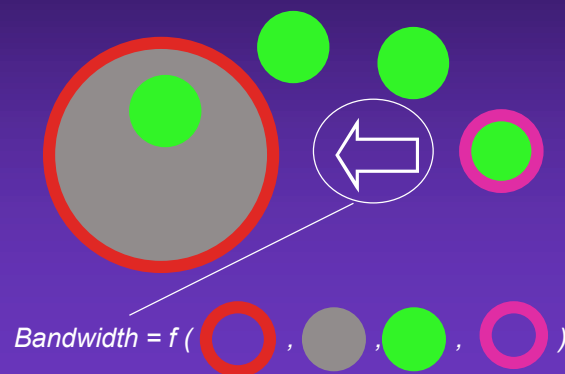
Human interaction with message



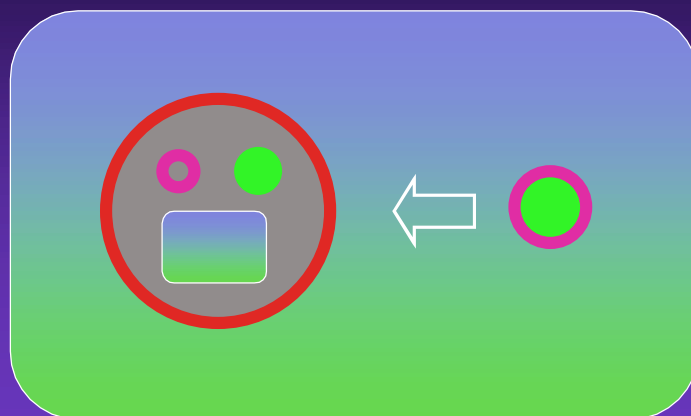
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What is the bandwidth of the information transfer?



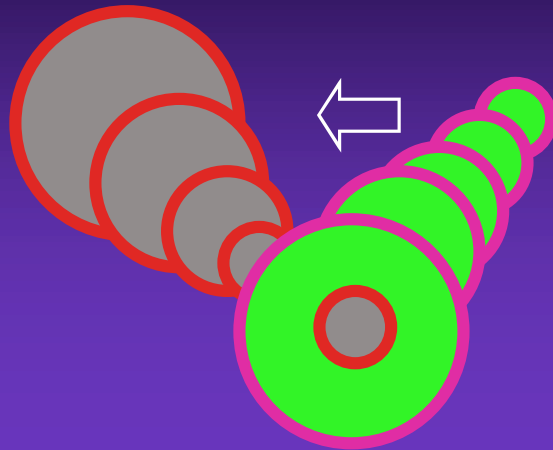
Old Way



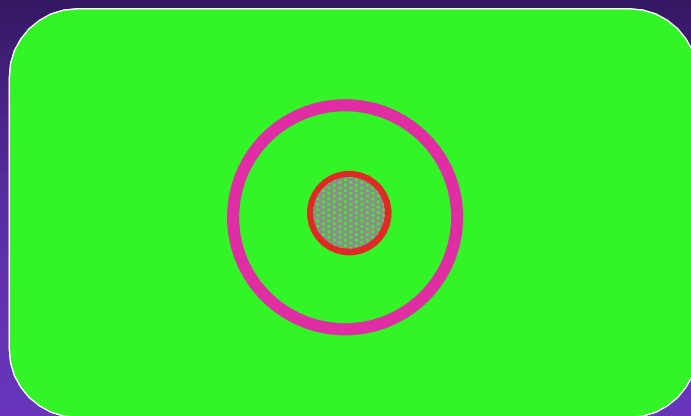
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Immersive VR

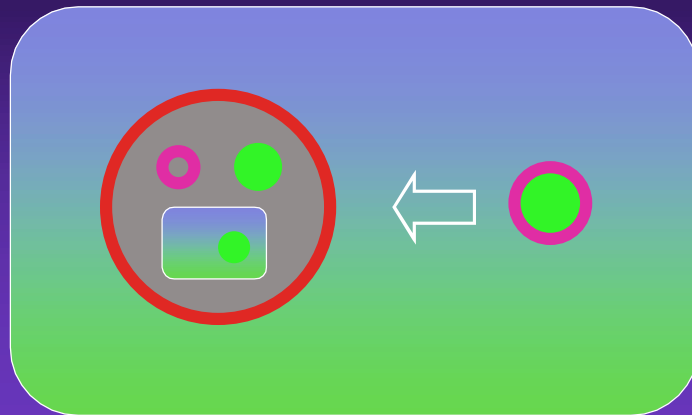


Implications of VR



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Implications of AR



Milgram's Continuum (1994)

