Boundaries of the Interface

THIRD-PERSON AUGMENTED REALITY IN A VIDEOGAME WORLD

This research explores how spatial interfaces are represented inside a third-person videogame. The project needs a way to evaluate interfaces that can live in the world, attach to objects, follow the camera, or sit on the screen.

When interface elements enter the game environment, they stop being neutral overlays. They raise questions about who can see the information, who the information belongs to, what the information means, and where it is anchored.

A hologram may be visible to everyone. An augmented or virtual layer may reveal privileged information. Information is a commodity. This framework separates what the player knows from what a character perceives.

RETINA OF THE MIND'S EYE

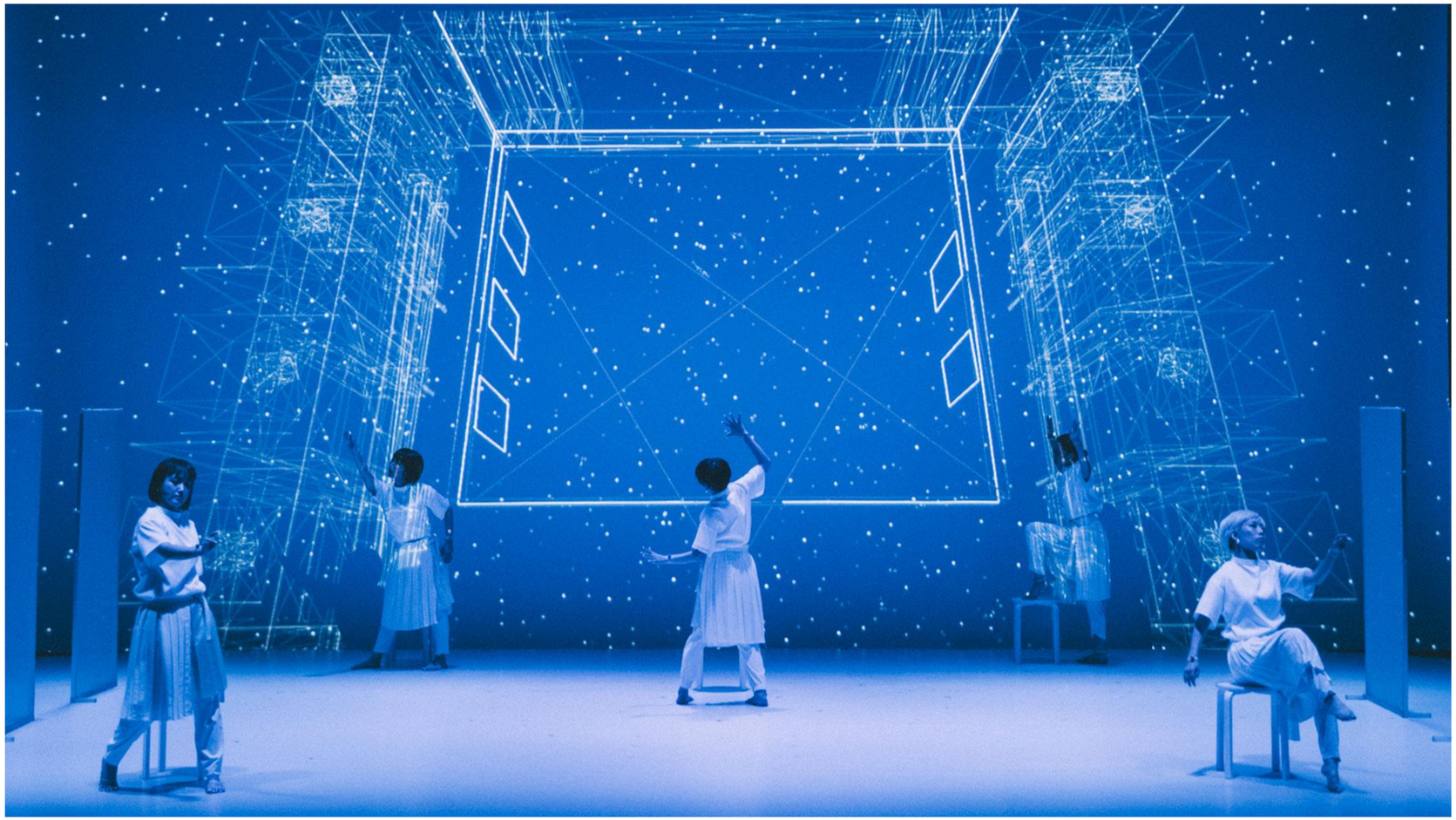


Image: *discrete figures*, ELEVENPLAY × Rhizomatiks Research × Kyle McDonald, photo by Suguru Saito, 2018.

"The television screen is the retina of the mind's eye. Therefore, the television screen is part of the physical structure of the brain. Therefore, whatever appears on the television screen emerges as raw experience for those who watch it. Therefore, television is reality, and reality is less than television."

(*Videodrome* 1983, David Cronenberg)

EVERY INTERFACE HAS TWO IDENTITIES

Posture

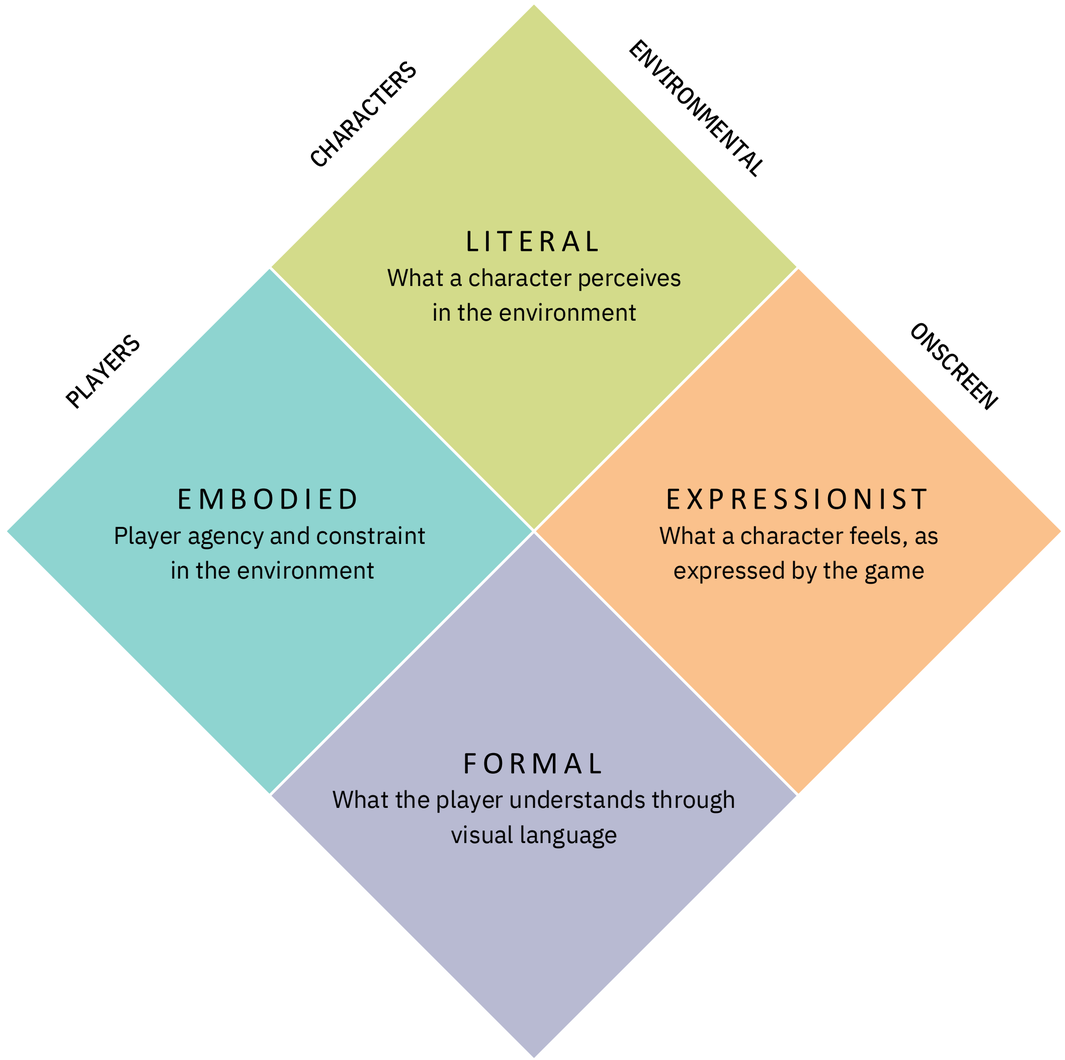
WHAT DOES IT MEAN?
WHO IS IT FOR?
WHAT DOES IT MAKE AVAILABLE?

Reference Frame

WHERE IS IT BOUND?
WHAT DOES IT MOVE WITH?
WHAT CHANGES WHEN THE VIEW CHANGES?

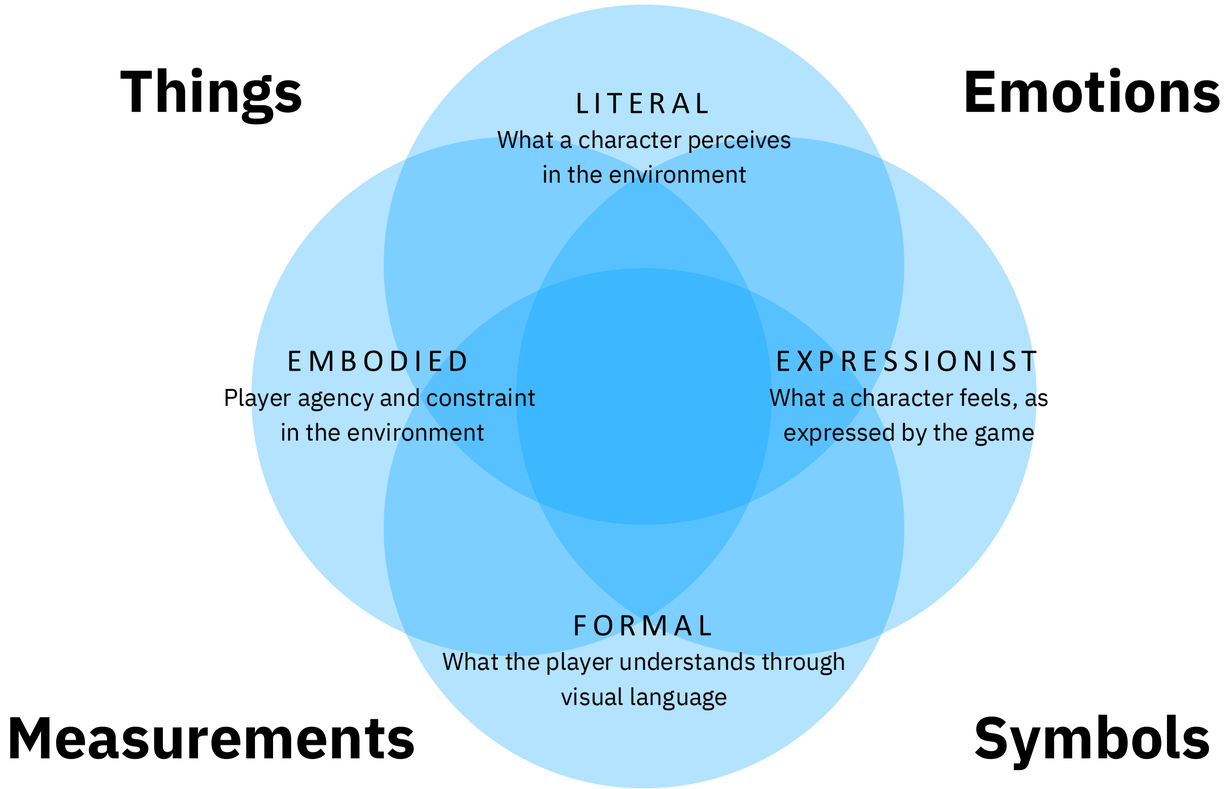
Postures

BOUNDARIES BETWEEN PLAYERS, SCREENS, CHARACTERS, AND ENVIRONMENTS



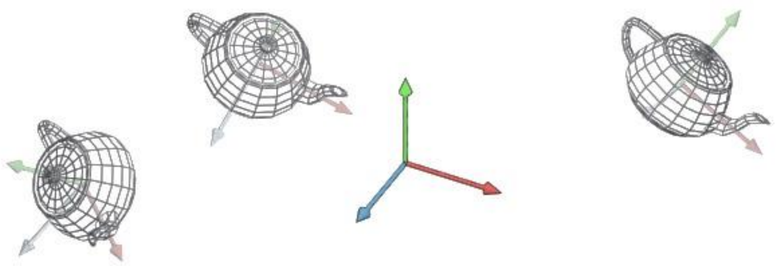
Postures

REPRESENTATIONS OF AN INTERFACE ARE FLUID AND OFTEN OVERLAP



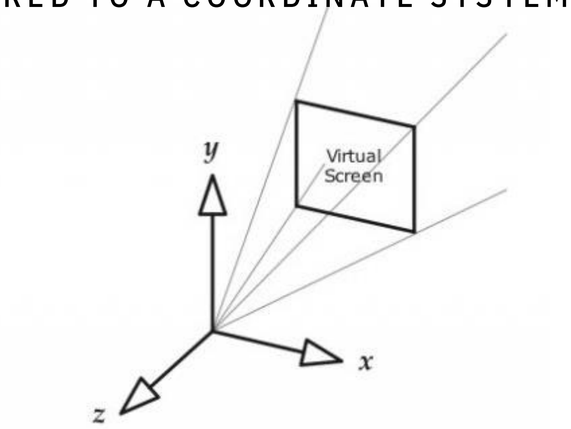
Reference Frames

REPRESENTATIONS OF AN INTERFACE ARE ANCHORED TO A COORDINATE SYSTEM



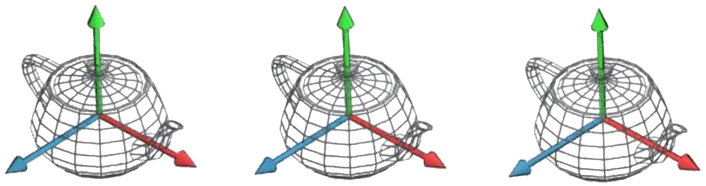
WORLD-SPACE

Each of these teapots is positioned uniquely in a 3-dimensional space



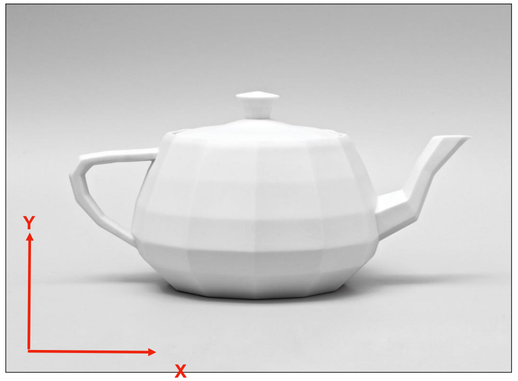
CAMERA-SPACE

The camera view projects into world space, and all objects within are considered in terms of the camera's reference frame.



OBJECT-SPACE

Each of the teapots maintains a personal reference frame, independent of position and orientation in the world



SCREEN-SPACE

The camera view is mapped to a 2-dimensional screen. All coordinates are now described as (x,y) values relative to an edge of the screen

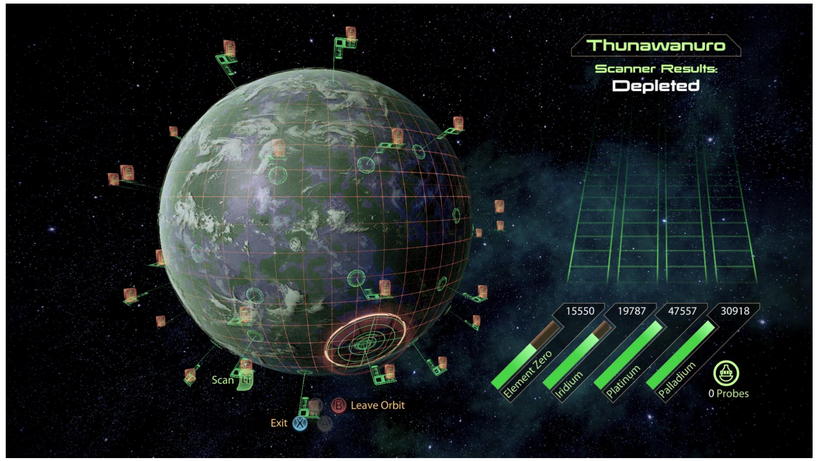
IN-GAME EXAMPLES OF REFERENCE FRAMES

WORLD-BOUND

Attached to the geometry of the world

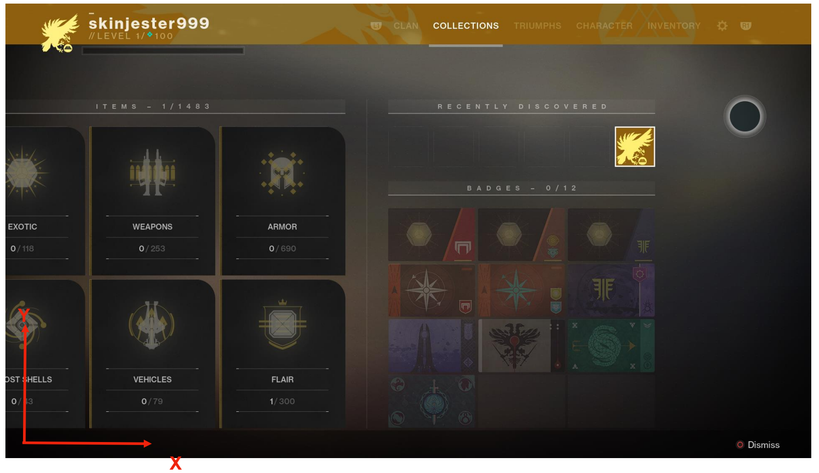
CAMERA-BOUND

Held relative to the camera view



OBJECT-BOUND

Attached to an object's local frame



SCREEN-BOUND

Mapped to screen coordinates

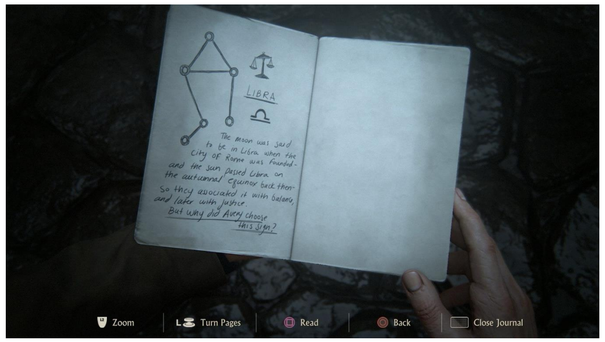
The Literal Posture

An interface assumes a LITERAL posture when it belongs to a CHARACTER'S reality. It may appear as a projection, hologram, object, or device. The PLAYER accesses it because the CHARACTER can see or use it.

WORLD-BOUND / LITERAL
Projection

OBJECT-BOUND / LITERAL
Device Display

CAMERA-BOUND / LITERAL
Visor Display

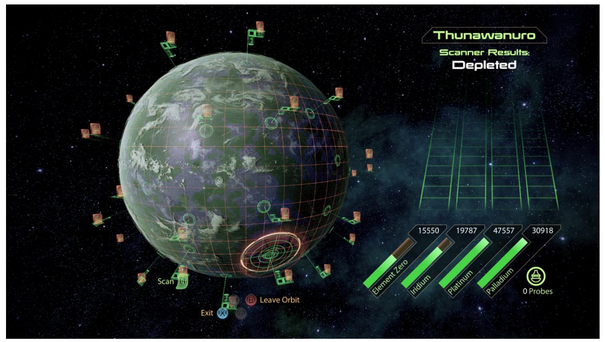


SCREEN-BOUND / LITERAL
Document Viewer

The Formal Posture

An interface assumes a FORMAL posture when the game gives its rules a recognizable language. The PLAYER understands what the system is, what it allows, and how to act through it.

WORLD-BOUND / FORMAL
Game Board

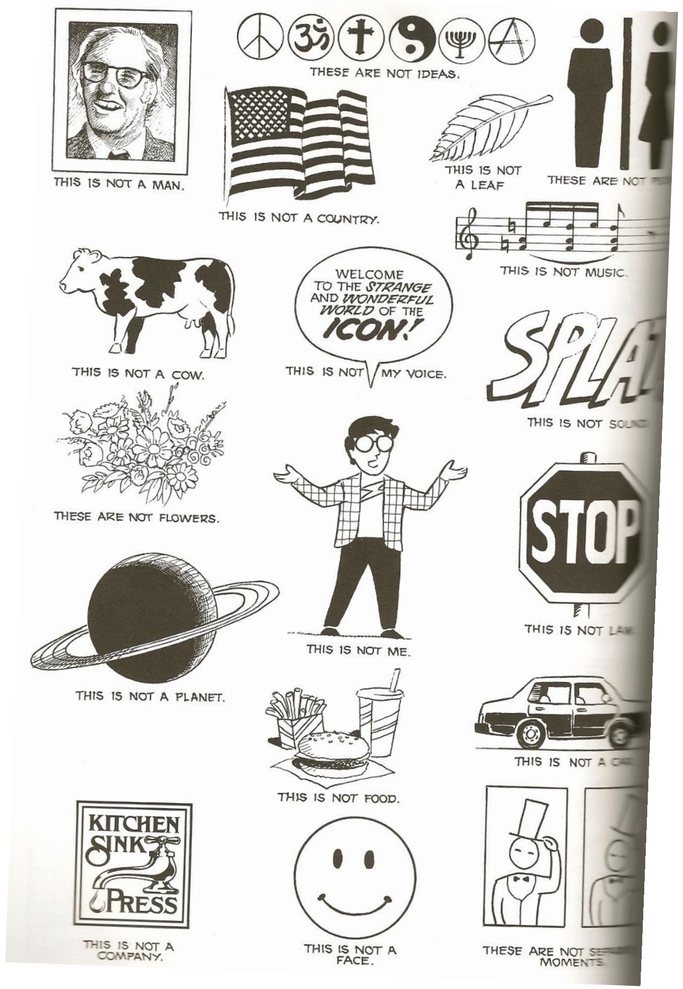


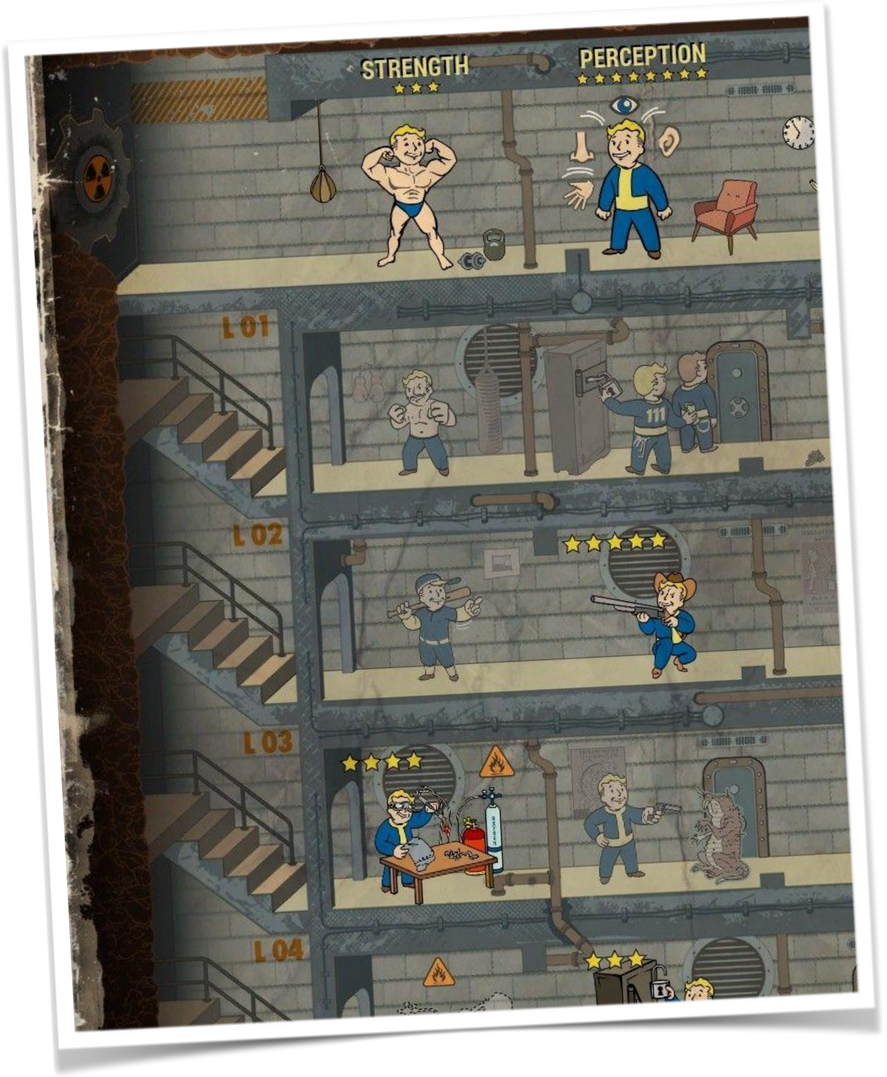
OBJECT-BOUND / FORMAL
Interactive Model

CAMERA-BOUND / FORMAL
Spatial Menu

SCREEN-BOUND / FORMAL
Overlay

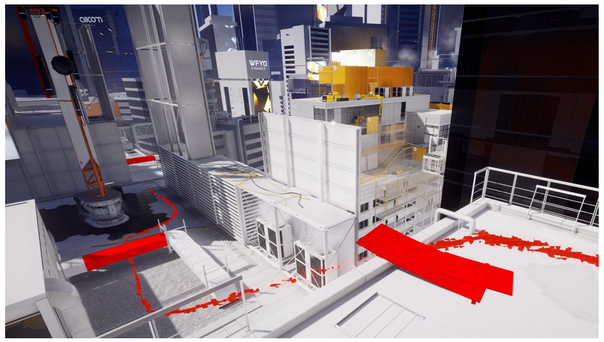
DEEP MYSTERIES OF THE FORMAL POSTURE





The Embodied Posture

An interface assumes an EMBODIED posture when it makes clear what can be done in space. It connects the PLAYER'S spatial awareness to choice.

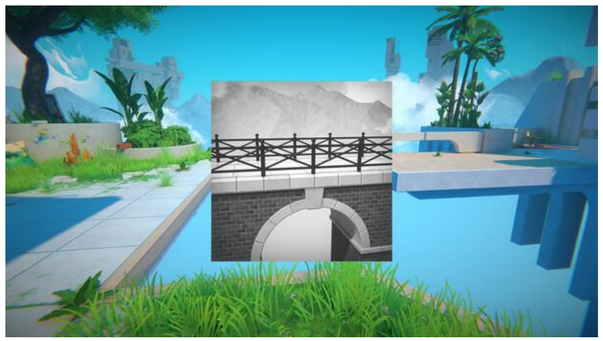


WORLD-BOUND / EMBODIED

Path

OBJECT-BOUND / EMBODIED

Manipulation Controls



CAMERA-BOUND / EMBODIED

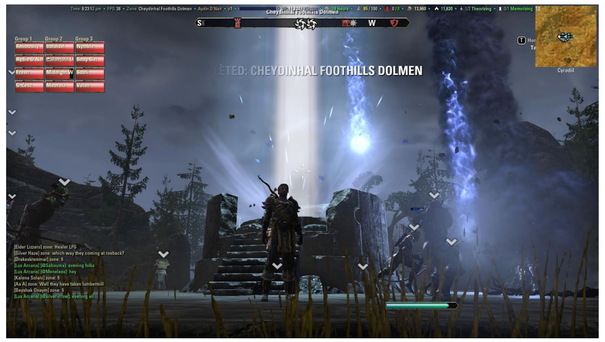
Placement Preview

SCREEN-BOUND / EMBODIED

Directional Locator

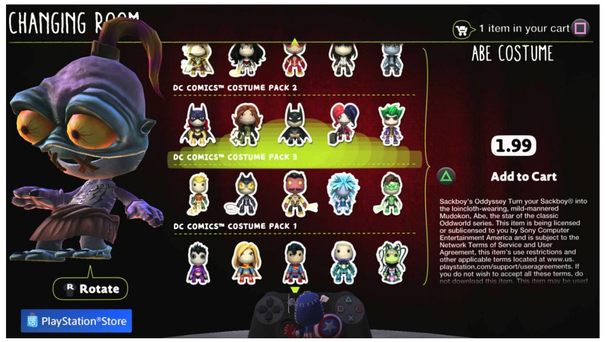
The Expressionist Posture

An interface assumes an EXPRESSIONIST posture when it communicates feeling through the behavior of the game image. The PLAYER understands emotional meaning through changes in the world, character, camera, or screen.



WORLD-BOUND / EXPRESSIONIST

Atmosphere



OBJECT-BOUND / EXPRESSIONIST

Collectible Preview

CAMERA-BOUND / EXPRESSIONIST

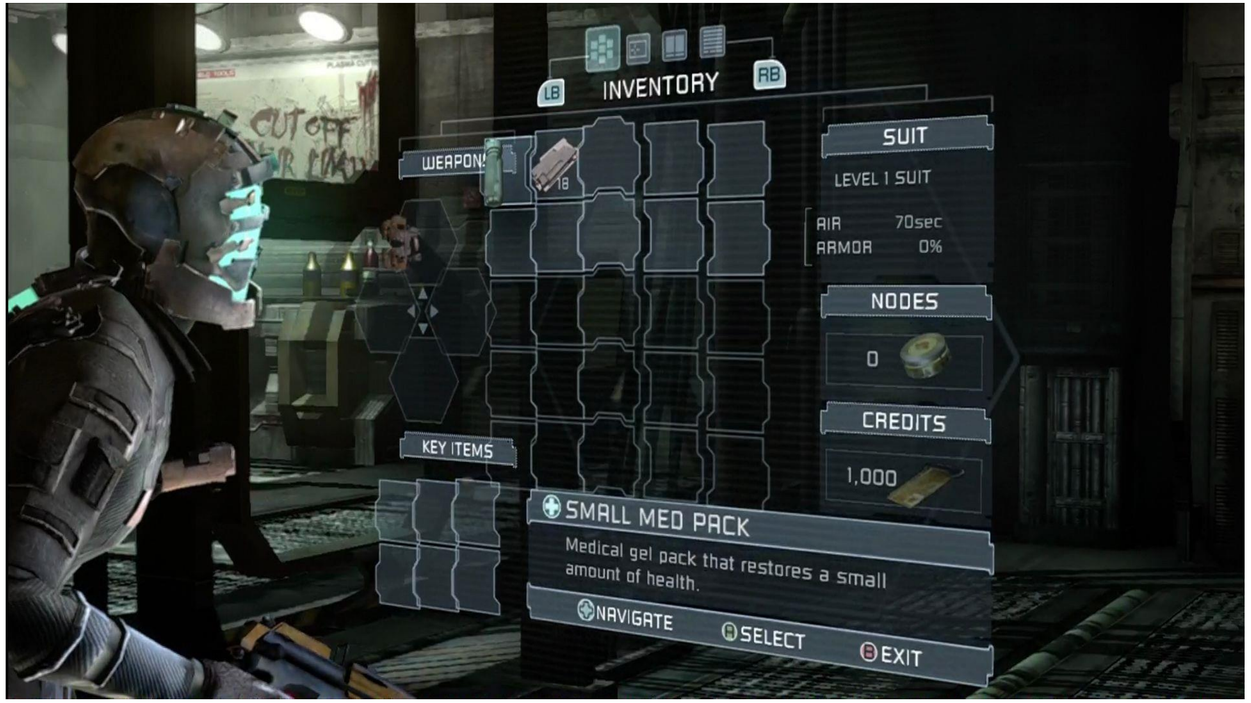
Optics

SCREEN-BOUND / EXPRESSIONIST

Frame Buffer Projection

Literal vs Formal Posture

ONE IS A DEVICE INTERFACE. ONE IS A GAME INTERFACE.



OBJECT-BOUND / LITERAL

In this example from *Dead Space*, the holographic inventory menu literally emanates from Isaac Clarke's armor for him to view. To further ground the fiction the hologram behaves as a light source and moves with him as he moves. The player looks over Isaac's shoulder to see what he sees.

CAMERA-BOUND / FORMAL

In this example from *The Division*, an inventory menu appears in a panel anchored to camera space. Although the character appears to be looking at the menu, the game's narrative doesn't support this conclusion. Instead, the player is provided with a dashboard representation of the game itself.

Screen Space vs Camera View

SAME VISUAL LANGUAGE, DIFFERENT REFERENCE FRAME

SCREEN-BOUND / FORMAL

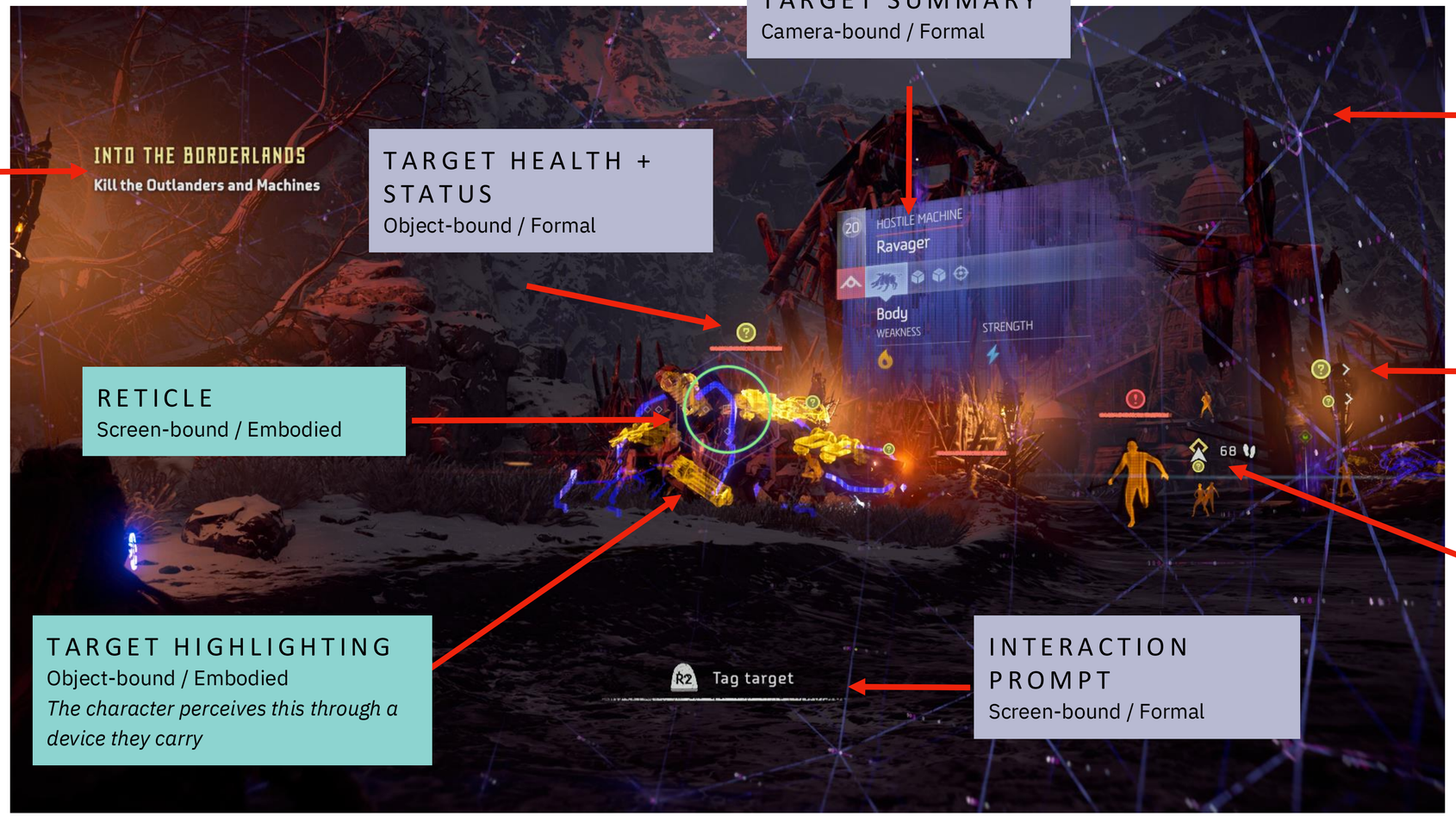
The standard *Fallout 4* HUD uses a visual language associated with device interfaces, but it remains fixed to screen space and presented to the player from outside the world.

CAMERA-BOUND / LITERAL

Inside power armor, the same visual language takes on a different meaning because the interface becomes attached to the camera view from inside the suit.

Integrating the Boundaries

During play, many interfaces operate at once. Each one has a posture and a reference frame. Together, they create a layered field of awareness that helps the PLAYER understand the situation and act within it.



QUEST OBJECTIVE
Screen-bound / Formal

TARGET SUMMARY
Camera-bound / Formal

TARGET HEALTH + STATUS
Object-bound / Formal

RESTRICTED MOTION BOUNDARY
Object-bound / Embodied

RETICLE
Screen-bound / Embodied

OFF-CAMERA LOCATOR
Screen-bound / Embodied

QUEST LOCATOR
World-bound / Embodied

TARGET HIGHLIGHTING
Object-bound / Embodied
The character perceives this through a device they carry

INTERACTION PROMPT
Screen-bound / Formal

Situational awareness during combat in Horizon Zero Dawn

Crossing Boundaries

THIS FRAMEWORK HELPS A TEAM DECIDE WHAT AN INTERFACE MEANS BY CHOOSING WHERE IT BELONGS